

Virtual Competence and Collaborative Online Team Performance: The Backpackers' Perspective

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Abstract. The research goal of this study was to determine how virtual competence and collective efficacy affect collaborative design team in a virtual community. In this study, we formulated the virtual communities' co-creation model from the perspective of trust perspective, and we collected virtual community participation samples from the backpackers' forum by mailing a questionnaire survey to those who agreed to participate. The model and hypotheses were tested by structural equation modeling.

Keywords: Backpackers, Virtual Community, Collaboration.

1. Introduction

A traveler has different needs and regards themselves as the real travelers against the mass tourists. He or she searches for more authentic experiences, travel to remote places, and spend significant periods of time in those travel enclaves, where travel routes and plans are the main theme that they will discuss with other travelers, and share mental maps of tourist destinations that are reinforced by communications amongst travels.

The travel community served as a reference group that could significantly influence travelers' beliefs, attitudes, and choices. We have found that e-commerce and Internet-based services will gain increasing popularity through the use of virtual communities. For travel organizations (including travel suppliers and their intermediaries), the establishment and maintenance of such communities will offer both special opportunities and challenges (Leimeister et al., 2008). For example, such communities erase the boundaries created by time and distance and make it substantially easier for people to obtain information, maintain connections, deepen relationships, and meet like-minded people who they would otherwise never have met.

The research goal of this study was to determine how virtual competence and collective efficacy affect collaborative design team in a virtual community. In this study, we formulated the virtual communities' co-creation model from the perspective of trust perspective, and we collected virtual community participation samples from the backpackers' forum by mailing a questionnaire survey to those who agreed to participate. The model and hypotheses were tested by structural equation modeling.

2. The Research Model

The research goal of this study was to determine how virtual competence and collective efficacy affect collaborative design team in a virtual community; we formulated the virtual communities' co-creation model from the perspective of trust perspective as fig 1.

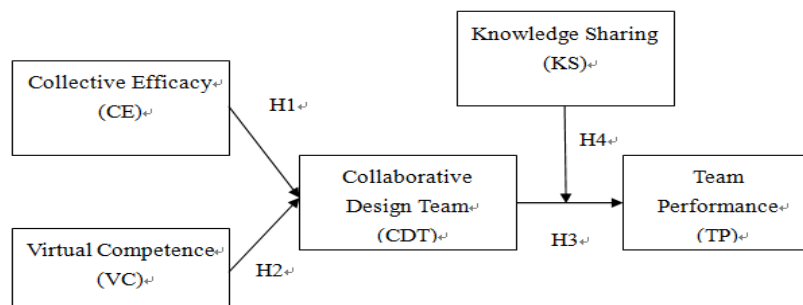


Fig. 1: Research model.

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2.1. Collective Efficacy

Self efficacy is referred to a person's belief in his or her capability to achieve a mission or task. It is suggested that individuals' self efficacy strongly influence their sense of collective efficacy which is defined as a group's shared beliefs in their capabilities to perform tasks (Bandura, 1997). Members of online travel communities believe in their beliefs that they can solve and improve problems, which help to develop a collaborative team. Therefore, it is reasonable to hypothesize that collective efficacy has strong affection on the formation of collaborative design team.

H1. Collective efficacy is positively associated with the formation of collaborative design team.

2.2. Virtual Competence

Virtual competence refers to the state of a person's knowledge, skill, ability, motivation, that guide action to collaborate and communicate with others in a virtual community for the purpose of completing a shared goal or a mutual task (Kraiger et al., 1993; Wang & Haggerty, 2009). Previous research argued virtual competence is positively related to performance because people with high level of virtual competence can perform well, transmit larger quantity and richer quality information with miscellaneous media, and build necessary collaborations with other members with less cost in a virtual community (Jarvenpaa & Leidner, 1999; Majchrzak et al., 2005). These lead to H2.

H2. Virtual competence is positively associated with the formation of collaborative design team.

2.3. Collaborative Design Team

Collaborative design team is one type of virtual teams which is consisted of similar-minded or organizationally distributed members who use miscellaneous combined information and means of communication technologies to achieve a mission. (Bjorn & Ngwenyama, 2009; Majchrzak et al., 2000). Several studies have shown that collaboration in a virtual team is critical to mitigate the impact of information uncertainty and create more precise needs as well as improve performance of work (Banker et al., 2006; Nambisan, 2002). In addition, Hoegl et al. (2004) indicated that interteam collaboration has a positive impact on performance. These lead to H3.

H3. Collaboration in a collaborative design team is positively associated with the team performance.

2.4. Knowledge Sharing

Knowledge is defined by Davenport (1998) and Darroch (2003) as actionable comprehensive interpretations and information reinforced by mix of personal experience, individual talent, value, and context. Knowledge sharing is often referred to as the organizational process whereby the transfer of wisdom, skills, and technology is applied through various means such as social networks, informal and formal meetings, and dialogue (Tsai, 2002; Yang, 2009). As suggested by Racherla et al. (2008), knowledge sharing is found helpful to encourage collaboration in a team to perform better and the collaboration depends on people's attitude to trust and accept each other's expertise knowledge. The following hypothesis is thus proposed:

H4. Knowledge sharing is positively affective between the collaborative design team and the team performance.

3. Research Methodology

2894 questionnaires were delivered to backpackers on virtual communities via email. 135 valid samples were collected.

4. Analysis and Results

This study used PLS-Graph (version 3.01) to verify the measurements and test hypotheses. In this study, the loadings of all indicators are larger than 0.50. Item reliability, convergent validity, and discriminate validity were used to test the measurement model based on PLS analysis. In Table 3, the loadings of all indicators are larger than 0.5.

The composite reliability, AVE, and Cronbach's alpha values in Table 4 indicate the presence of high internal consistency. In this study, Cronbach's alpha value of each construct is more than 0.6.

Table 1: Reliabilities and variances

Construct	Composite Reliability	AVE	Cronbach Alpha
TP	0.83	0.50	0.84
CE	0.87	0.54	0.83
VC	0.90	0.42	0.88
CDT	0.86	0.61	0.78

Our testing of the structural model included estimating the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables, and the R² value, which indicates the amount of variance explained by the independent variables. Table 2 lists the coefficients of path analysis, which indicates that H1–H3 were supported.

In the study, moderating effects can be assured by comparing the difference between the main effect and the moderating effect models (Carte & Russell, 2003). We first obtained the R² of the dependent variable alone.

Table 2: Hypothesis testing

Independent variables	Dependent variable: TP	
	Model 1	Model 2
CE->CDT (H1)	0.192(2.600)*	0.190(2.770)*
VC->CDT (H2)	0.552(7.759)*	0.554(8.268)*
CDT->TP (H3)	0.635(9.514)*	-0.015(-0.233)*
KS*CDT (H4)		0.800(11.164)*

The above four steps can be used to test the effect on the variance of adding a new variable (the interaction term) into the model (Chin, Marcolin, & Newsted, 2003). The results indicated that H4 was supported.

5. Conclusions and Implications

According to the results, collective efficacy is positively associated with the formation of collaborative design team in virtual communities. Completing a task is easier than doing it on one's own when people are willing to collaborate in a community. Hence, the beliefs of forming a team to solve problems are helpful for the collaborative design team to develop. Members in the virtual communities have to have not only the willingness to collaborate, but also the abilities of using the correct tool to help with their tasks. Once the members of those communities have the skills to use the internet properly, the collaborative team can perform better and more attracting to people with similar minds to form a team.

Virtual community members get more information of travel planning if they are happy to share their own experiences and knowledge. Knowledge sharing improves the willingness of collaboration and creates better team performance. Virtual travel community members have to be helpful, knowledgeable, and contributing to make their travel plans better. When a self efficacy gets into collective efficacy, it enables the collaborative team to develop with good virtual competence. The three main factors create better travel plans with the willingness to share knowledge with other travelers.

It is possible to take advantage of the good information shared in travel forums, which are sometimes not included in travel guides. Travel agents could utilize travel forums to gather rare and precious travel information so that they can use them in proper situation. By doing so, travel guides published before can become more sophisticated and useful as more tips are given. Also, essential travel writers are possibly found on travel forums because sometimes the forum members are really good at writing and guiding others

about travel matters but yet to be found. Those publishers who are looking for professional travel writers can take advantage of travel forums.

6. References

- [1] Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- [2] Banker, R. D., Bardhan, I., & Asdemir, O. (2006). Understanding the impact of collaboration software on product design and development. *Information Systems Research*, 17, 352–373.
- [3] Carte, T.A., & Russell, C.J. (2003). In pursuit of moderation: Nine common errors and their solutions. *MIS Quarterly*, 27(3), 479–501.
- [4] Chin, W.W., Marcolin, B., & Newsted, P.R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189–217.
- [5] Darroch, J. (2003). Developing a measure of knowledge management behaviours and practices. *Journal of Knowledge Management*, 7(5), 41–54.
- [6] Davenport, T. H. (1998). Ten principles of knowledge management and four case studies. *Knowledge and Process Management*, 4(3), 187–208.
- [7] Hoegl, M., Weinkauff, K., & Gemuenden, H. G. (2004). Interteam Coordination, Project Commitment, and Teamwork in Multiteam R&D Projects: A Longitudinal Study. *Organization Science*, 15(1), 38-55.
- [8] Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science*, 10(6), 791–815.
- [9] Kraiger, K., Ford, J. K., & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology*, 78(2), 311-328.
- [10] Leimeister, J. M., Schweizer, K., Leimeister, S., & Krcmar, H. (2008). “Do virtual communities matter for the social support of patients? Antecedents and effects of virtual relationships in online communities”. *Information Technology & People*, 21(4), 350-374.
- [11] Majchrzak, A., Malhotra, A., & John, R. (2005). Perceived individual collaboration knowhow development through information technology-enabled contextualization: Evidence from distributed teams. *Information Systems Research*, 16(1), 9–27.
- [12] Majchrzak, A., Rice, R. E., Malhotra, A., King, N., & Ba, S. (2000). Technology adaption: The case of a computer-supported inter-organizational virtual team. *MIS Quarterly*, 24, 569–600.
- [13] Nambisan, S. (2002). Designing Virtual Customer Environments for New Product Development: Toward a Theory. *The Academy of Management Review*, 27(3), 392-413.
- [14] Racherla, P., Hu, C., & Hyun, M. Y. (2008). Exploring the Role of Innovative Technologies in Building a Knowledge-Based Destination. *Current Issues in Tourism*, 11(5), 407-428. doi: 10.1080/13683500802316022
- [15] Tsai, W. (2002). Social structure of ‘cooperation’ within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing. *Organization Science*, 13(2), 179–190.
- [16] Wang, Y., & Haggerty, N. (2009). Knowledge transfer in virtual settings: The role of individual virtual competency. *Information Systems Journal*, 19(6), 571–593.
- [17] Yang, J. T. (2009). Individual attitudes to learning and sharing individual and organizational knowledge in the hospitality industry. *The Service Industries Journal*, 29(12), 1723-1743.