Online Communities of Practice from the Perspective of Social Learning and Knowledge Sharing: A Research Review (Postprint)

Authors: Zhang Weiwei, Jiang Xue

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Abstract

[Purpose/Significance] Online Communities of Practice (OCoP) are effective tools for promoting social learning and knowledge sharing. Reviewing and evaluating the research progress in this area can provide references and insights for knowledge management theory and practice. [Methods/Process] This study first examines the connotation, elements, and characteristics of OCoP from a conceptual analysis perspective, then systematically discusses relevant research progress from four aspects: theoretical foundation, community management, user knowledge behavior, and user continuous participation, and finally provides a comprehensive review of existing research, summarizing its shortcomings and proposing future research directions. [Results/Conclusions] The technical design of OCoP learning environments is crucial for their development. Recent research has focused on demand-side behaviors such as knowledge seeking and knowledge reuse, as well as bidirectional behaviors that integrate supply and demand. Meanwhile, knowledge contribution research increasingly emphasizes the influence and role of practical activities, community interaction, and artifact design. Continuous use is a prerequisite for continuous knowledge sharing, which includes continuous contribution, seeking, and reuse; the relationships among these continuous behavioral intentions require further exploration. Furthermore, a research perspective combining social learning and knowledge management is an effective approach to enhancing knowledge sharing effectiveness in OCoP.

Full Text

Preamble

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Zhang Weiwei, Jiang Xue
School of Management Science and Engineering, Nanjing University of Information Science and Technology, Nanjing 210044

Abstract

[**Purpose/Significance**] Online Communities of Practice (OCoP) are effective tools for promoting social learning and knowledge sharing. Reviewing and evaluating the progress of related research can provide reference for knowledge management theory and practice. [**Method/Process**] This paper first analyzes the connotation, elements, and characteristics of OCoP from a conceptual perspective. It then systematically discusses relevant research progress from four aspects: theoretical foundation, community management, user knowledge behavior, and user continuous participation. Finally, it provides a comprehensive review of existing research, summarizes deficiencies, and proposes future research directions. [**Result/Conclusion**] The technical design of OCoP learning environments is crucial for their development. Recent research focuses on demand-side behaviors such as knowledge seeking and reuse, as well as two-way behaviors combining supply and demand. Meanwhile, knowledge contribution research increasingly emphasizes the impact of practical activities, community interaction, and artifact design. Continuous usage is a prerequisite for continuous knowledge sharing, which includes continuous contribution, seeking, and reuse. The relationships among these continuous behavioral intentions require further exploration. Furthermore, integrating social learning and knowledge management perspectives is an effective approach to enhance OCoP knowledge sharing effects.

Keywords: online communities of practice; user knowledge behavior; knowledge sharing; social learning
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1. Introduction

Communities of Practice (CoP), as important tools for knowledge sharing, organizational learning, and informal learning, have become a significant topic in education and knowledge management over the past two decades. Online Communities of Practice (OCoP) represent the product of traditional CoP in social media environments and constitute a novel form of social learning that has attracted considerable interest from researchers in organizational behavior, user information behavior, and related fields. To enhance core competitiveness,

enterprises must cultivate employees' learning capabilities, particularly informal learning abilities. Fundamentally, learning is a social process, and online CoP serve as effective, informal social learning systems. With the rising popularity of social media in recent years, numerous OCoPs targeting specific knowledge domains have emerged, generating strong interest and active participation from professionals, domain enthusiasts, learners, and knowledge seekers. Various enterprises, government agencies, and educational institutions have established OCoPs for specific professional fields, such as Zhihu, Guokr, Luogicheng (Luo Ji Thinking), and other knowledge-sharing platforms, as well as technical communities like Kaiyuan China, Logclub Logistics Salon, Spark Technology Community, ITPub, and Alibaba Business Community. These platforms, focused on delivering valuable knowledge and insights to specific groups, have gained increasing recognition.

OCoP-related research has consistently attracted attention from academia and practitioners both domestically and internationally. It is widely recognized that CoP are effective tools for improving knowledge sharing levels. However, issues such as low user participation intention and serious member attrition remain prominent. Additionally, the failure of many knowledge management projects is attributed to low employee willingness to use knowledge management systems, with employees preferring informal networks. It is estimated that only 5% of new knowledge is acquired through organizational training, while the vast majority of workplace knowledge is obtained through informal processes. This is because tacit knowledge is embedded in individual skills, wisdom, and experience, making it difficult to articulate and only effectively shared through interactive activities and informal learning. Therefore, exploring the management mechanisms of OCoP and the characteristics and patterns of user behavior holds important practical significance for improving knowledge sharing levels and professionals' informal learning capabilities in online communities.

This study employed various literature retrieval tools, including full-text journal search systems, abstract databases, Google Scholar, major literature databases (Web of Science, CNKI, EBSCO, Elsevier), and open-access academic resources. Additionally, citation tracing was used to expand the scope of literature investigation. Chinese literature was searched using keywords such as "online communities of practice," "virtual communities of practice," and "professional virtual communities." English literature was searched using "online communities of practice," "virtual communities of practice," and "professional virtual communities." The search was conducted from January 2 to January 5, 2019, with further screening using "social learning" or "knowledge management" as additional criteria. A total of 183 documents were retrieved and traced, including 48 Chinese and 135 English articles. After reviewing abstracts and keywords, 86 documents were selected as thematically relevant.

2. Connotation Analysis of Online Communities of Practice

As an academic research object, Communities of Practice emerged in the 1990s, initially applied as social learning theory in educational contexts, and gradually extended to organizational learning, knowledge management, and professional continuing education. As a social learning and knowledge management tool, OCoP inherits the social interaction functions of social media and online communities while downplaying the entertainment aspects of other social software. This concept is expressed with slight variations across different literature. To clarify the connotation of OCoP, the authors conducted extensive literature investigation. Based on careful content review and citation relationships among documents, OCoP is conceptually similar or essentially consistent with Virtual Communities of Practice (VCoP), Electronic Networks of Practice (ENoP), and Professional Virtual Communities (PVC). Representative literature was selected, and through content coding and data extraction, partial results were summarized in Table 1 . The "Community Members" and "Knowledge Domain" columns in Table 1 were extracted from empirical or case study objects in representative literature.

OCoP represents an organic combination of traditional offline CoP and online practice networks or online communities. OCoP inherits traditional CoP's focus on problem-solving and domain knowledge sharing but lacks the tight member relationships and frequent face-to-face interactions of traditional CoP. Instead, OCoP features the loose member relationships, large self-organizing scale, and computer-mediated online communication typical of electronic networks or online communities.

Based on the literature investigation summarized in Table 1, OCoP can be defined as an informal learning system and open activity system based on online technology, oriented toward specific knowledge domains, and focused on sharing practical experience. OCoP comprises three core elements: online communities, knowledge domain, and practical activities. As shown in Table 1, online community members can be traditional organizational members or employees forming relatively tight online social structures through computer mediation, or they can be professionals from various fields and ordinary Internet users forming relatively loose self-organizing social spaces through Internet platforms and social media tools. The knowledge domain represents the themes and interests collectively pursued by online communities, covering areas such as enterprise practical experience, information technology, healthcare, education, law, and tourism. Knowledge is defined as personalized or subjective information related to facts, procedures, concepts, interpretations, ideas, observations, and judgments. Practical activities form the foundation of knowledge exchange in online communities, with common types including problem-solving, information requests, similar experience seeking, resource reuse, coordination and collaboration, document creation, knowledge mapping, and gap identification.

3. Theoretical Foundation of Online Communities of Practice: Social Learning

Social learning, originating from situated learning theory, constitutes the theoretical foundation for knowledge sharing in communities of practice. J. Lave and E. Wenger proposed situated learning in their study of CoP, arguing that learning is fundamentally a social process whose essential characteristic is legitimate peripheral participation in communities of practice. What distinguishes CoP from traditional learning contexts is the authenticity and social nature of learning situations. The shift from individual cognition to learning contexts can be traced back to A. Bandura's social learning theory, which posits that learning occurs in social contexts, emphasizes the influence of social variables on human behavior, and proposes valuable concepts such as observational learning, reciprocal determinism, and self-efficacy. E. Wenger further provided a social definition of learning, proposing a conceptual framework for social learning systems to understand the social process of learning. Social learning systems have three core concepts: learning community, community boundary, and user identity. Boundaries are important concepts that provide learning opportunities different from community internals, are dynamically changing, and enable individual benefit maximization through boundary learning. User identity is another core concept, with identity formation being an important component of learning that possesses both social attributes (how others see you) and individual attributes (how you see yourself).

C. M. Johnson emphasized that individuals learn through practice, engage in social learning through participation, deepen mutual commitment among members, and further advance practical activities. Social learning is built upon collaborative learning as part of collective learning, though not all collective learning is social. Social learning in CoP is staged, with learning theoretically viewed as a trajectory into the community, emphasizing the importance of participating in practical activities. Social participation shapes member identity, and significant changes in knowledge and skills bring corresponding identity transformations. Members engage in knowledge exchange, acquisition, and evaluation through social learning. Recent academic attention has focused on analyzing and developing social learning capabilities. For example, E. Vrieling et al. proposed a social learning assessment framework for teacher professional communities, while M. D. Laat et al. applied this framework to analyze specific practice cases and explore group dynamics related to learning objectives.

In recent years, social learning concepts have been widely applied in organizational behavior, technological innovation, e-commerce, and consumer behavior. Although social learning theory predates social media, social media and other online technologies have enriched and enhanced social learning. Tacit knowledge and its transfer have long been central concerns in knowledge management. Tacit knowledge can only be represented and acquired through organizational and social learning processes. Many attributes of tacit knowledge cannot be manifested by individuals alone but are fully expressed through socialized orga-

nizational approaches, such as member interactions in situated practical activities. This characteristic requires experts with tacit knowledge to participate in problem-solving processes. Therefore, social learning based on CoP is an effective pathway for tacit knowledge transfer.

Social learning constitutes an important component of practical activities in online CoP, and related theories can effectively guide community knowledge sharing practices. Recent research indicates that integrating social learning and knowledge management perspectives is an effective approach to enhance knowledge sharing effects in CoP.

4. OCoP Management Research

4.1 Structural Design of Online Communities of Practice

Community structure distinguishes CoP from traditional learning contexts. Without planned design and organization, knowledge management goals through CoP will fail. Community design should include leadership, interconnections, members, projects, artifacts, and other elements, with artifacts being important components of community technical design, encompassing community-generated content, tools, media, and processes. C. M. Johnson noted that designing community flow mechanisms from novice to expert and from periphery to core is particularly important. M. Corso et al. proposed a model for CoP evolutionary paths through case analysis, pointing out that creating CoP requires joint participation from organizations and individuals. C. J. Chen et al. argued that CoP should include knowledge repositories and effective mechanisms for collecting, managing, and utilizing knowledge, noting that community value is limited without diverse, reusable, and continuous knowledge supply. Feng Tao constructed a knowledge sharing system framework for teacher OCoP and proposed five corresponding strategies. Y. Pan et al. suggested from a technical design perspective that social network function design can promote two-way knowledge exchange between knowledge sharers and seekers.

4.2 Governance Models of Online Communities of Practice

Activity-centered organization patterns are distinctive features of OCoP compared to other communities. Cultivating core members is significant for OCoP, as their presence guides and drives community knowledge sharing behaviors. V. P. Dennen explored pathways for new members to transition from peripheral participation to community core through case analysis, affirming the value of legitimate peripheral participation through observing community norms. OCoP blur individual learning boundaries while emphasizing interconnections among members, promoting collaborative problem-solving. The sustainability of CoP depends on members' sense of value from continuous participation and the continuity of goals, enabling them to remain even after initial objectives are achieved. Although CoP are self-organizing networks without formally appointed lead-

ership, researchers argue that community member structures should include leadership layers to regulate knowledge sharing activities. Interconnections, participation, and trust are key factors for long-term sustainable development.

4.3 Effectiveness Evaluation of Online Communities of Practice

The most recognized function of CoP is enabling tacit knowledge generation and dissemination. Exchanging tacit knowledge through CoP helps people better handle work tasks and reduces new member learning time. J. F. Harvey et al. considered CoP ideal learning tools with functions for sharing domain perspectives, building trust, maintaining long-term relationships, mutual recognition, and creating practical activities. In recent years, OCoP have been widely applied in professional fields, particularly education and public healthcare. CoP can enhance interdisciplinary teaching by integrating multidisciplinary perspectives and enabling collaborative teaching. T. Kwong et al. evaluated teacher CoP effectiveness through user surveys and interviews. However, most community users only engage in reading activities, with limited content contribution and knowledge sharing. Issues regarding privacy, trust, and how to improve member participation through community technical design and activity development require urgent solutions.

5. User Knowledge Behavior Research in Online Communities of Practice

Knowledge itself is not the most valuable asset; rather, the most valuable is organizational members' ability to innovate using knowledge, which is based on knowledge sharing and reuse. Knowledge contribution and knowledge seeking are different types of knowledge behaviors that are closely linked and jointly promote knowledge sharing. Community users are both knowledge suppliers and demanders. Knowledge sharing is a composite concept encompassing multiple knowledge behaviors, including knowledge contribution from suppliers and knowledge seeking, adoption, and reuse from demanders. Through extensive literature investigation, content analysis, and concept extraction, this study summarizes user knowledge behavior types in online communities from three perspectives—knowledge supply side, demand side, and two-way behavior—as shown in Table 2 .

5.1 Knowledge Supply-Side Research

Knowledge sharing and contribution in online communities are increasingly important research topics recognized by academia. Domestic and international research primarily focuses on antecedents influencing user knowledge contribution or sharing, examining factors such as internal and external motivation, social capital, social cognition, and organizational climate. M. M. Wasko et al. applied collective action theory to verify how individual motivation and social capital affect knowledge contribution, finding structural capital to have the most sig-

nificant effect. A. Kankanhalli et al. used social exchange theory to explain knowledge contribution behavior, discovering that knowledge self-efficacy and helpfulness significantly influence contribution. C. M. Chiu et al. integrated social capital and social cognitive theories, validating the effects of social interaction, trust, reciprocity, identity, and outcome expectations on knowledge sharing intention. M. H. Hsu et al. categorized knowledge sharing influencing factors into individual (self-efficacy, outcome expectations) and environmental (multidimensional trust) factors based on social cognitive theory. M. Ma et al. revealed theoretically and empirically that technical designs such as rating systems and user profiles can drive knowledge contribution. S. A. Brown et al. emphasized the role of practical activities and social networks in knowledge sharing, noting that complex practical tasks increase member interaction frequency. Additionally, motivation and trust positively influence CoP knowledge sharing processes.

5.2 Knowledge Demand-Side Research

W. Zhang et al. applied information processing dual-process theory to explain community members' knowledge adoption behavior, adding type consistency and information consistency cues to heuristic cues and elaboration likelihood. A. Majchrzak et al. divided innovative knowledge reuse processes into six stages through case analysis, identifying three main actions: redefining problems and methods, searching for and evaluating other reusable ideas, and continuing development of selected ideas. P. H. Gray et al. found that users primarily search knowledge repositories to solve problems when studying user motivation for knowledge seeking. H. Kyriakou et al. studied knowledge reuse in open design communities, proposing a third type—customized reuse—distinct from copy-and-paste reuse and innovative reuse. Recent research on knowledge reuse has begun attracting attention.

5.3 Integrated Research on Two-Way Behavior

Two-way behavior represents the interaction and integration between knowledge demanders and suppliers, including knowledge exchange, transfer, and transformation, emphasizing the effectiveness of knowledge sharing activities. S. Watson et al. explored influencing factors and relationships among knowledge contribution, acquisition, and reuse in organizational contexts, finding that user knowledge acquisition and reuse behaviors driven by reciprocity motives stimulate knowledge contribution intentions. As knowledge contribution increases, users evolve from continuous knowledge seekers to continuous knowledge contributors. Conversely, contribution behavior positively promotes knowledge acquisition, which is crucial for community advancement. Y. Pan et al. studied knowledge sharing and seeking behaviors in OCoP based on social capital theory and transactive memory systems, validating social networks' effects on knowledge exchange. K. Behfar et al. examined knowledge transfer among different development groups in open-source communities, finding that intensive intra-

group knowledge transfer positively influences sparse inter-group transfer.

6. User Continuous Participation Research in Online Communities of Practice

Continuous intention of user knowledge behavior is far more complex than initial participation. To deeply understand continuous behavior mechanisms, careful examination of how user behavior evolves with experience is necessary. The sustainability of OCoP largely depends on members' willingness to initiate and continuously contribute knowledge. Although online communities have grown significantly in number, only a few can retain users and stimulate continuous knowledge sharing. Continuous knowledge sharing is a key factor for sustainable online community development, a view widely recognized in academia.

Current research on user continuous behavior in information systems, social media, online communities, and network services is increasing, covering topics such as post-adoption behavior, continuous usage, continuous knowledge sharing, continuous participation, continuous knowledge seeking, and continuous knowledge contribution. Based on user knowledge behavior type research, continuous knowledge sharing includes continuous knowledge seeking and contribution, while post-adoption behavior and continuous participation can be incorporated into continuous knowledge sharing research.

6.1 Continuous Usage Research in Online Communities of Practice

Initial adoption behavior and post-adoption continuous behavior differ significantly, with most post-adoption behavior studies using the ISC-ECM model. Continuous usage intention is determined by satisfaction with information system usage and perceived usefulness of continuous usage. S. S. Kim et al. established a longitudinal model explaining various post-adoption behavior mechanisms, including how previous evaluations affect subsequent evaluations, past usage influences user evaluations, and the correlation between past and future usage. I. Y. L. Chen divided professional virtual community users' continuous participation intention into context-driven (social interconnection) and technology-driven (knowledge quality and system quality) factors. V. Venkatesh et al. extended the two-stage expectation-confirmation theory for IS continuous usage by adding effort expectancy, social influence, and facilitating conditions as predictors of perceived usefulness, while incorporating trust as a key factor in transaction system contexts. Recent research mostly derives from and develops ISC-ECM in different contexts. For example, Li Wu et al. applied the ECM model to continuous usage intention of social reading apps, subdividing perceived usefulness into reading and social usefulness while adding subjective norms. X. Lin et al. studied SNS users' continuous usage models based on ISC-ECM, adding SNS-specific variables (perceived privacy risk, perceived enjoyment, perceived reputation, community identity) affecting satisfaction.

6.2 Continuous Knowledge Sharing Research in Online Communities of Practice

Knowledge sharing is individuals' use of information systems (online communities) for knowledge adoption, while continuous knowledge sharing is viewed as post-adoption behavior. W. He et al. studied continuous knowledge sharing intention from both knowledge contribution and seeking perspectives, proposing that user beliefs are context-dependent, requiring driver models in both behavioral contexts. Y. H. Fang et al. examined the effects of justice, trust, and organizational citizenship behavior on continuous knowledge sharing intention. X. L. Jin et al. studied continuous contribution behavior (answering questions) in online Q&A communities, finding direct effects of satisfaction and knowledge self-efficacy on continuous knowledge contribution intention. T. Guan et al. found that identity-based trust, feedback from previous contributions, opportunities for social exposure, word-of-mouth marketing, and pressure from reciprocity norms positively affect continuous knowledge contribution in Q&A communities. K. F. Hashim et al. verified the moderating effects of trust and affective commitment on continuous knowledge sharing intention. Social capital, perceived usefulness, and perceived ease of use positively influence knowledge sharing satisfaction, which in turn affects continuous knowledge sharing intention. Additionally, knowledge sharing atmosphere, sense of value, and communication interaction significantly affect continuous intention. Li Li constructed a relationship model between continuous knowledge contribution intention and continuous knowledge seeking intention, finding that the former positively influences the latter through helpfulness and reciprocity.

7. Discussion and Future Research Directions

7.1 OCoP Management

Existing research primarily focuses on organizational contexts, advocating OCoP as an informal knowledge management tool. Community governance emphasizes the effects of community interaction, trust, and value on continuous participation, while practical activities, informal networks, leadership roles, and core member cultivation are important for OCoP knowledge management and learning effectiveness. Although current research shows mixed results regarding OCoP effectiveness as a knowledge management tool, there is general consensus that OCoP are effective pathways for transferring and sharing tacit knowledge. Academia also widely recognizes OCoP as effective tools for cultivating and promoting learning processes, with learning environment design being crucial for community development. Future research directions include how to implement social learning-required tools from a community technical design perspective and conduct corresponding empirical investigations.

7.2 Community User Knowledge Behavior

Although substantial research literature uses knowledge sharing as a theme, careful examination reveals that most essentially explore knowledge contribution behavior. Early research focused on knowledge supply-side behavior, exploring various driving factors from internal and external motivation perspectives, with social cognitive theory, social capital theory, and social exchange theory being commonly used theoretical foundations. Recent research has gradually shifted attention to demand-side behaviors such as knowledge seeking and reuse, as well as two-way behaviors combining supply and demand. These studies verify that knowledge contribution and acquisition are inseparable, mutually influential organic wholes. Additionally, knowledge contribution research increasingly focuses on the effects of practical activities, community interaction, technical design, and various tool-mediated artifacts.

7.3 Community User Continuous Participation Intention

OCoP can be viewed as a special type and application of information systems. Continuous knowledge sharing and social learning presuppose continuous usage and participation in online technologies and communities, making information systems continuous usage theories applicable for analyzing OCoP users' continuous knowledge behavior and social learning activities. Compared to extensive and mature continuous usage research, continuous knowledge sharing research remains limited, mostly focusing on continuous knowledge contribution or sharing. Continuous usage research has confirmed the significant effects of perceived usefulness and satisfaction on continuous intention, with specific model constructs depending on research contexts, providing reference for continuous knowledge behavior research. Furthermore, continuous knowledge sharing involves multiple behaviors including continuous contribution, seeking, and reuse, with relationships among these continuous behavioral intentions representing unexplored research directions.

Comprehensive domestic and international research shows that OCoP-related research spans knowledge management, user information behavior, and information systems usage. Social learning and knowledge sharing are the two main practical activities in OCoP, coexisting, mutually promoting, and influencing each other while representing important manifestations of community value and cornerstones of community development. Traditional CoP-based knowledge sharing theories can no longer adapt to new technology and environment developments. Future research should emphasize the construction, verification, and development of socialized, collaborative knowledge behavior and knowledge sharing theories. Additionally, future research directions include examining how social network structural characteristics, core members, participant heterogeneity, and other factors affect knowledge sharing and continuous participation intention; how user knowledge contribution, seeking, and reuse behaviors evolve, integrate, and influence each other over time; and how to promote continuous knowledge sharing effectiveness in OCoP from a mechanism design perspective.

References

[1] MARSICK V J, SHIOTANI A K, GEPHART M A. Teams, communities of practice, and knowledge networks as locations for learning professional practice [M]//BILLETT S, HARTEIS C, GRUBER H. International handbook of research in professional and practice-based learning. Dordrecht: Springer Netherlands, 2014: 1021-1041.

[2] ALJUWAIBER A. Communities of practice as an initiative for knowledge sharing in business organisations: a literature review[J]. Journal of knowledge management, 2016, 20(4): 731-748.

[3] LAVE J, WENGER E. Situated learning: legitimate peripheral participation [M]. Cambridge: Cambridge University Press, 1991.

[4] WENGER E. Communities of practice and social learning systems[J]. Organization, 2000, 7(2): 225-246.

[5] FRASER C, HONEYFIELD J, BREEN F, et al. From project to permanence: growing inter-institutional collaborative teams into long-term, sustainable communities of practice [M]//MCDONALD J, CATER-STEEL A. Communities of practice: facilitating social learning in higher education. Singapore: Springer Singapore. 2017: 567-598.

[6] KANKANHALLI A, TAN B C Y, WEI K K. Contributing knowledge to electronic knowledge repositories: an empirical investigation[J]. MIS quarterly, 2005, 29(1): 113-143.

[7] DOLORIERT C, BOULTON W, SAMBROOK S A. Facilitating collective and social learning [M]. London: Kogan Page Publishers, 2017.

[8] NONAKA I, KROGH G V. Tacit knowledge and knowledge conversion: controversy and advancement in organizational knowledge creation theory[J]. Organization science, 2009, 20(3): 635-652.

[9] ZHANG L, GUO M, WU Q H. Analysis of success factors for foreign enterprise communities of practice: case studies of Alcoa, Ernst & Young, and Schlumberger[J]. Library and information service, 2016, 60(7): 133-138.

[10] WASKO M M, FARAJ S. Why should I share? Examining social capital and knowledge contribution in electronic networks of practice[J]. MIS quarterly, 2005, 29(1): 35-57.

[11] WASKO M M, TEIGLAND R, FARAJ S. The provision of online public goods: examining social structure in an electronic network of practice[J]. Decision support systems, 2009, 47(3): 254-265.

[12] SEDIGHI M, LUKOSCH S, Van SPLUNTER S, et al. Employees' participation in electronic networks of practice within a corporate group: perceived benefits and costs[J]. Knowledge management research & practice, 2017, 15(3): 460-470.

[13] beck r, pahlke i, seebach C. Knowledge exchange and symbolic action in social media-enabled electronic networks of practice: a multilevel perspective on knowledge seekers and contributors[J]. MIS quarterly, 2014, 38(4): 1245-1269.

[14] FADEL K J, MESERVY T O, JENSEN M L. Dissecting the process of knowledge filtering in electronic networks of practice [C]// 2014 47th Hawaii International Conference on System Sciences. Hawaii: IEEE, 2014.

[15] FADEL K J, MESERVY T O, JENSEN M L. Exploring knowledge filtering processes in electronic networks of practice[J]. Journal of management information systems, 2015, 31(4): 158-181.

[16] LIN M-J J, HUNG S-W, CHEN C-J. Fostering the determinants of knowledge sharing in professional virtual communities[J]. Computers in human behavior, 2009, 25(4): 929-939.

[17] HUNG S Y, LAI H M, CHOU Y C. Knowledge-sharing intention in professional virtual communities: a comparison between posters and lurkers[J]. Journal of the Association for Information Science and Technology, 2015, 66(12): 2494-2510.

[18] CHEN I Y L. The factors influencing members' continuance intentions in professional virtual communities — a longitudinal study[J]. Journal of information science, 2007, 33(4): 451-467.

[19] CHEN C J, HUNG S W. To give or to receive? Factors influencing members' knowledge sharing and community promotion in professional virtual communities[J]. Information & management, 2010, 47(4): 226-236.

[20] LAI H M, CHEN C P, CHANG Y F. Determinants of knowledge seeking in professional virtual communities[J]. Behaviour & information technology, 2014, 33(5): 522-535.

[21] TAMJIDYAMCHOLO A, BIN BABA M S, SHUIB N L M, et al. Evaluation model for knowledge sharing in information security professional virtual community[J]. Computers & security, 2014, 43: 19-34.

[22] TSENG F C, KUO F Y. The way we share and learn: an exploratory study of the self-regulatory mechanisms in the professional online learning community[J]. Computers in human behavior, 2010, 26(5): 1043-1053.

[23] CONNELLY M, BEALS A, VANDERLIP A, et al. Professional virtual communities for health care implementers: impact of participation on practice[J]. iProc, 2015, 1(1): e11.

[24] ZHANG W, WATTS S. Online communities as communities of practice: a case study[J]. Journal of knowledge management, 2008, 12(4): 55-71.

[25] CHEUNG C M K, LEE M K O, LEE Z W Y. Understanding the continuance intention of knowledge sharing in online communities of practice through the post-knowledge-sharing evaluation processes[J]. Journal of the American Society for Information Science and Technology, 2013, 64(7): 1357-1374.

[26] ARDICHVILI A, MAURER M, LI W, et al. Cultural influences on knowledge sharing through online communities of practice[J]. Journal of knowledge management, 2006, 10(1): 94-107.

[27] GUNAWARDENA C N, HERMANS M B, SANCHEZ D, et al. A theoretical framework for building online communities of practice with social networking tools[J]. Educational media international, 2009, 46(1): 3-16.

[28] Valaitis R K, Akhtar-Danesh N, Brooks F, et al. Online communities of practice as a communication resource for community health nurses working with homeless persons[J]. Journal of advanced nursing, 2011, 67(6): 1313-1324.

[29] ZHANG W, WATTS S. Knowledge adoption in online communities of practice[J]. Systèmes d'information & management, 2016, 21(2): 67-88.

[30] NISTOR N, BALTES B, SCHUSTEK M. Knowledge sharing and educational technology acceptance in online academic communities of practice[J]. Campus-wide information systems, 2012, 29(2): 108-116.

[31] FENG T. Knowledge sharing system framework and sharing strategies for teacher online communities of practice[J]. China educational technology, 2012(6): 56-62.

[32] KARAM R, STRAUS S G, BYERS A, et al. The role of online communities of practice in promoting sociotechnical capital among science teachers[J]. Educational technology research and development, 2018, 66(2): 215-245.

[33] PAN Y, XU Y, WANG X, et al. Integrating social networking support for dyadic knowledge exchange: a study in a virtual community of practice[J]. Information & management, 2015, 52(1): 61-70.

[34] FANG Y H, CHIU C M. In justice we trust: exploring knowledge-sharing continuance intentions in virtual communities of practice[J]. Computers in human behavior, 2010, 26(2): 235-246.

[35] HSU M H, JU T L, YEN C H, et al. Knowledge sharing behavior in virtual communities: the relationship between trust, self-efficacy, and outcome expectations[J]. International journal of human-computer studies, 2007, 65(2): 153-169.

[36] ARDICHVILI A, WENTLING T, PAGE V. Motivation and barriers to participation in virtual knowledge-sharing communities of practice[J]. Journal of knowledge management, 2003, 7(1): 64-77.

[37] MAIRS K, MCNEIL H, MCLEOD J, et al. Online strategies to facilitate health-related knowledge transfer: a systematic search and review[J]. Health information & libraries journal, 2013, 30(4): 261-277.

[38] FORD J R, KORJONEN H, KESWANI A, et al. Virtual communities of practice: can they support the prevention agenda in public health?[J]. Online journal of public health informatics, 2015, 7(2): 1-12.

[39] MCLOUGHLIN C, PATEL K D, O'CALLAGHAN T, et al. The use of virtual communities of practice to improve interprofessional collaboration and education: findings from an integrated review[J]. Journal of interprofessional care, 2018, 32(2): 136-142.

[40] NISTOR N, BALTES B, DASCĂLU M, et al. Participation in virtual academic communities of practice under the influence of technology acceptance and community factors. A learning analytics application[J]. Computers in human behavior, 2014, 34: 339-344.

[41] VINSON C A. Using concept mapping to develop a conceptual framework for creating virtual communities of practice to translate cancer research into practice[J]. Preventing chronic disease, 2014, 11: 1-8.

[42] HURTUBISE K, RIVARD L, HÉGUY L, et al. Virtual knowledge brokering: describing the roles and strategies used by knowledge brokers in a pediatric physiotherapy virtual community of practice[J]. Journal of continuing education in the health professions, 2016, 36(3): 186-194.

[43] ALAVI M, LEIDNER D E. Review: knowledge management and knowledge management systems: conceptual foundations and research issues[J]. MIS quarterly, 2001, 25(1): 107-136.

[44] BANDURA A. Social learning theory [M]. London: Prentice Hall, 1976.

[45] FARNSWORTH V, KLEANTHOUS I, WENGER-TRAYNER E. Communities of practice as a social theory of learning: a conversation with etienne wenger[J]. British Journal of educational studies, 2016, 64(2): 139-160.

[46] JOHNSON C M. A survey of current research on online communities of practice[J]. The internet and higher education, 2001, 4(1): 45-60.

[47] WENGER-TRAYNER E. Learning in landscapes of practice: boundaries, identity, and knowledgeability in practice-based learning [M]. London: Routledge, 2014.

[48] PHARO E, DAVISON A, MCGREGOR H, ET Al. Using communities of practice to enhance interdisciplinary teaching: lessons from four Australian institutions[J]. Higher education research & development, 2014, 33(2): 239-251.

[49] VRIELING E, Van DEN BEEMT A, De LAAT M. What's in a name: dimensions of social learning in teacher groups[J]. Teachers and teaching, 2016, 22(3): 239-256.

[50] LAAT M D, VRIELING E, BEEMT A V D. Facilitation of social learning in teacher education: the 'dimensions of social learning framework' [M]//MCDONALD J, CATER-STEEL A. Communities of practice: facilitating social learning in higher education. Singapore: Springer Singapore, 2017: 567-598.

[51] SONG W H, YU H Y, JIANG W. Research on the influence mechanism of ethical leadership on employee creativity: from the perspective of social learning

and knowledge sharing[J]. Soft science, 2014(12): 112-115.

[52] PENG W, ZHU Q W, LE T. Dual paths of inclusive leadership influencing employee creativity: an integrated perspective based on social learning and social exchange[J]. Collected essays on finance and economics, 2017(10): 90-97.

[53] DU B. Construction and empirical study of innovation diffusion model based on social learning[J]. Systems engineering - theory & practice, 2014(10): 2619-2627.

[54] MATSUO M, MINAMI C, MATSUYAMA T. Social influence on innovation resistance in internet banking services[J]. Journal of retailing and consumer services, 2018, 45: 42-51.

[55] FENG J, YAO Z. Research on the influence of online review information on purchase decision based on social learning theory[J]. Chinese journal of management science, 2016(9): 106-114.

[56] LUIZ ANTONIO J, BERNARDO L. Relevant factors for tacit knowledge transfer within organisations[J]. Journal of knowledge management, 2010, 14(3): 410-427.

[57] ZHENG Z L, ZHU F Q, MENG Q W, et al. Analysis of tacit knowledge from the perspective of action: based on Polanyi's perspective and "embodiment of action" theory[J]. Studies in science of science, 2013(10): 1453-1458.

[58] HARVEY J-F, COHENDET P, SIMON L, et al. Another cog in the machine: designing communities of practice in professional bureaucracies[J]. European management journal, 2013, 31(1): 27-40.

[59] CORSO M, ANDREA G, ANTONELLA M. Designing and managing business communities of practice[J]. Journal of knowledge management, 2009, 13(3): 73-89.

[60] DENNEN V P. Becoming a blogger: trajectories, norms, and activities in a community of practice[J]. Computers in human behavior, 2014, 36: 350-358.

[61] KEAY J, MAY H, O' MAHONY J. Improving learning and teaching in transnational education: can communities of practice help?[J]. Journal of education for teaching, 2014, 40(3): 251-266.

[62] SALDANA J B. Mediating role of leadership in the development of communities of practice [M]//MCDONALD J, CATER-STEEL A. Communities of practice: facilitating social learning in higher education. Singapore: Springer Singapore, 2017: 567-598.

[63] KWONG T, COX M D, CHONG K, et al. Assessing the effect of communities of practice in higher education: the case at Hong Kong Baptist University[J]. Learning communities journal, 2016, 8(2): 171–198.

[64] MAJCHRZAK A, COOPER L P, NEECE O E. Knowledge reuse for innovation[J]. Management science, 2004, 50(2): 174-188.

[65] YAN Y, DAVISON R M, MO C. Employee creativity formation: the roles of knowledge seeking, knowledge contributing and flow experience in Web 2.0 virtual communities[J]. Computers in human behavior, 2013, 29(5): 1923-1932.

[66] SUTANTO J, JIANG Q. Knowledge seekers' and contributors' reactions to recommendation mechanisms in knowledge management systems[J]. Information & management, 2013, 50(5): 258-263.

[67] KYRIAKOU H, NICKERSON J V, SABNIS G. Knowledge reuse for customization: metamodels in an open design community for 3D printing[J]. MIS quarterly, 2017, 41(1): 315-334.

[68] MA M, AGARWAL R. Through a glass darkly: information technology design, identity verification, and knowledge contribution in online communities[J]. Information systems research, 2007, 18(1): 42-67.

[69] CHIU C-M, HSU M-H, WANG E T G. Understanding knowledge sharing in virtual communities: an integration of social capital and social cognitive theories[J]. Decision support systems, 2006, 42(3): 1872-1888.

[70] BROWN S A, DENNIS A R, BURLEY D, et al. Knowledge sharing and knowledge management system avoidance: the role of knowledge type and the social network in bypassing an organizational knowledge management system[J]. Journal of the American Society for Information Science and Technology, 2013, 64(10): 2039-2053.

[71] GRAY P H, DURCIKOVA A. The role of knowledge repositories in technical support environments: speed versus learning in user performance[J]. Journal of management information systems, 2005, 22(3): 159-190.

[72] WATSON S, HEWETT K. A Multi-theoretical model of knowledge transfer in organizations: determinants of knowledge contribution and knowledge reuse[J]. Journal of management studies, 2006, 43(2): 141-173.

[73] ZHAO X, WANG Q W, ZHANG C Z. From knowledge seekers to knowledge contributors: research on the mechanism of user role transformation in professional virtual communities[J]. Information science, 2017, 35(10): 18-22.

[74] BEHFAR S K, TURKINA E, BURGER-HELMCHEN T. Knowledge management in OSS communities: relationship between dense and sparse network structures[J]. International journal of information management, 2018, 38(1): 167-174.

[75] KIM S S, MALHOTRA N K. A Longitudinal model of continued is use: an integrative view of four mechanisms underlying postadoption phenomena[J]. Management science, 2005, 51(5): 741-755.

[76] HASHIM K F, TAN F B. The mediating role of trust and commitment on members' continuous knowledge sharing intention: a commitment-trust theory perspective[J]. International journal of information management, 2015, 35(2): 145-151.

[77] LI L. Research on the relationship between continuous knowledge seeking and continuous knowledge contribution intention in virtual communities[J]. Library journal, 2017(2): 20-28.

[78] BHATTACHERJEE A. Understanding information systems continuance: an expectation-confirmation model[J]. MIS quarterly, 2001, 25(3): 351-370.

[79] VENKATESH V, THONG J Y L, CHAN F K Y, et al. Extending the two-stage information systems continuance model: incorporating UTAUT predictors and the role of context[J]. Information systems journal, 2011, 21(6): 527-555.

[80] LI W, ZHAO X. Research on college students' continuance intention of social reading apps and its mechanism[J]. Journal of library science in China, 2016(1): 52-65.

[81] LIN X, FEATHERMAN M, SARKER S. Understanding factors affecting users' social networking site continuance: a gender difference perspective[J]. Information & management, 2017, 54(3): 383-395.

[82] HE W, WEI K-K. What drives continued knowledge sharing? An investigation of knowledge-contribution and -seeking beliefs[J]. Decision support systems, 2009, 46(4): 826-838.

[83] JIN X-L, ZHOU Z, LEE M K O, et al. Why users keep answering questions in online question answering communities: a theoretical and empirical investigation[J]. International journal of information management, 2013, 33(1): 93-104.

[84] Guan T, Wang L, Jin J, et al. Knowledge contribution behavior in online Q&A communities: an empirical investigation[J]. Computers in human behavior, 2018, 81: 137-147.

[85] CHEN M H. Research on users' continuous knowledge sharing intention in academic virtual communities[J]. Information and documentation services, 2015(1): 41-47.

[86] SHANG X L, WANG X D. Analysis of continuous knowledge sharing behavior of academic blog users: the influence of atmosphere sense, interaction sense and value sense[J]. Information science, 2016(7): 125-130,35.

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Note: Figure translations are in progress. See original paper for figures.