

A Comparative Analysis of Domestic and International Research Hotspots in Knowledge Payment: Postprint

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Abstract

[Purpose/Significance] Based on the current research status of knowledge payment in recent years, this study compares the research output of domestic and international knowledge payment, explores the research hotspots and development trends, and provides new reference guidance for the development of the knowledge payment industry. [Method/Process] Utilizing CiteSpace software, we conduct visual analysis of knowledge graphs on relevant domestic and international research literature. Through analyzing literature authors, journals, keywords, and abstracts, we examine research findings and perform comparative analysis between domestic and international studies. [Results/Conclusion] Academic circles both domestically and internationally are increasingly focusing on knowledge payment research. International research emphasizes users' continuous usage intention, knowledge sharing motivation, and payment motivation, whereas domestic knowledge payment research hotspots and frontiers include development strategies of knowledge payment platforms, the transition from knowledge sharing to knowledge payment, knowledge payment models in the live streaming and short video industry, and the refined development of knowledge production. Due to different research emphases between domestic and international studies, it is necessary to draw upon and integrate international research to promote innovation and development in domestic knowledge payment research.

Full Text

Comparative Analysis of Research Hotspots in Knowledge Payment: Domestic and International Perspectives

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Abstract

[Purpose/Significance] Based on the current state of knowledge payment research in recent years, this study compares research outputs on knowledge payment between domestic and international contexts to explore research hotspots and development trends, thereby providing new reference points for the knowledge payment industry' s development.

[Method/Process] Using CiteSpace software, this study conducts visualized knowledge mapping analysis of relevant domestic and international research literature. Through content analysis of authors, journals, keywords, and abstracts, the research findings are analyzed and compared across domestic and international contexts.

[Result/Conclusion] The academic community both domestically and internationally has shown increasing attention to knowledge payment research. International studies focus on users' continuous usage intention, knowledge sharing motivations, and payment motivations. In contrast, research on knowledge payment platform development strategies, the transition from knowledge sharing to knowledge payment, knowledge payment formats in the live streaming and short-video industry, and the refined development of knowledge production have become domestic research hotspots and frontiers. Due to differing research emphases between domestic and international scholarship, it is necessary to draw upon and integrate international research to promote innovation and development in domestic knowledge payment research.

Keywords: knowledge payment; knowledge payment platform; CiteSpace; research hotspot

The development of internet technology has made information increasingly complex and voluminous, requiring people to spend more time and effort searching for and digesting content. In this context, knowledge payment industry practitioners have identified business opportunities. According to a ranking of top 30 knowledge payment platforms released by *Internet Weekly* in May 2020, the top five were Kuaishou Classroom, NetEase Cloud Classroom, Qingting FM, Hejun Business School, and Sanjieke. Knowledge payment has taken on diverse forms, becoming more vertical and segmented. The market size of the knowledge payment industry grew from 28 billion yuan in 2019 to 40 billion yuan in 2020 and is expected to continue growing in the coming period, indicating broad market prospects for knowledge payment services. The year 2016 was pivotal for knowledge payment development. Over the past five years, increasing numbers of people have participated in knowledge payment activities, making it a common phenomenon. During the pandemic, online learning became the primary mode of education for students, while working professionals actively used knowledge payment to acquire workplace skills and personal development content to enrich and improve themselves.

The essence of knowledge payment services is to provide users with scarce, high-quality information resources through paid access. The emergence of knowledge payment behavior reflects society's demand for knowledge from individuals. In China, Luo Zhenyu's launch of the "Dedao" APP in 2016 marked the beginning of the knowledge payment industry's rise. As China's first knowledge service application, Dedao transformed from a video to an audio platform, exemplifying the principle that "knowledge is power." Xie Jintian et al. attribute Dedao's success to the founder's brand endorsement, precise user positioning, and authoritative, high-quality content. The emergence of Dedao signified that the concept of knowledge payment had become deeply rooted in people's minds. Other representative platforms include Zhihu and Himalaya. Zhihu is a typical knowledge Q&A platform offering paid consultation, Zhihu University, and Zhihu Live, while Himalaya pioneered the "ear economy" by focusing on leading audio innovation. Internationally, the concept of knowledge payment remains relatively ambiguous. Some scholars propose using "monetizing online content" to express knowledge payment. G. E. Ledford and K. J. Parent proposed developing new compensation plans for knowledge workers—how to "pay for knowledge"—indicating that the traditional concept of knowledge payment existed as early as the 1990s. The term "knowledge payment" is relatively rare in foreign-language journals, with "online paid knowledge" and "Q&A knowledge" being more common. Notable international knowledge payment platforms include Skillshare, Quora, and The Information, which charge subscription fees for providing skill-based knowledge and social knowledge services. The original concept of knowledge payment evolved from news media's Paywall transformation, with *The New York Times* achieving digital-era transformation through its paywall model. However, due to slow mobile payment adoption and strong copyright awareness abroad, knowledge payment development lags behind China and remains in its early stages.

Against this background, an increasing number of scholars domestically and internationally have begun focusing on knowledge payment, with research deepening through dynamic development. Therefore, it is necessary to organize, summarize, and synthesize knowledge payment research while comparing domestic and international development and research status.

Data Collection and Research Methods

Data Sources and Processing Data sources consist of relevant literature from CNKI and Web of Science (WoS) databases. Chinese source journals were limited to CSSCI, while foreign source journals were limited to WoS Core Collection journals. Search keywords in CNKI included "knowledge payment," "content payment," and "online knowledge payment." The WoS search query was: "TS=(knowledge payment) OR TS=(paid Q&A) OR TS=(online paid knowledge) OR TS=(paid-knowledge platform) OR TS=(pay for online education)." The data span covered 2010-2021, with literature types limited to journal articles. After manually removing conference papers and irrelevant studies, 439

Chinese articles and 123 foreign articles were retrieved for software analysis.

Research Tools and Methods This study employs bibliometric analysis and content analysis to examine knowledge payment-related papers. First, CiteSpace software was used to analyze publication trends, co-citation analysis, burst detection, and clustering mapping to visually present literature and institutional distribution while identifying research hotspots, frontiers, and evolutionary paths in knowledge payment research. Second, through content analysis, extensive literature reading was conducted to analyze current research status, summarize findings, and identify future research trends and potential hotspots.

Domestic and International Knowledge Payment Research Overview and Hotspots

Comparative Analysis of Publication Trends As shown in [Figure 1: see original paper], while international literature on knowledge payment appeared earlier than domestic literature, the overall growth scale has been more rapid domestically, with concentrated development primarily between 2016-2020. International literature shows a general upward fluctuating trend. Domestic publications exceeded 120 articles in 2019 but declined to approximately 90 in 2020, showing a clear downward trend. International publications on knowledge payment remain relatively small in volume, with the highest output in 2020 and a decrease in 2021.

Analyzing journal distribution reveals core journals and publication preferences in the research field, providing references for future researchers. shows that major publication outlets include library and information science journals such as *Library and Information Service* and *Modern Intelligence*, as well as information management journals like *Information & Management* and *Journal of Information Science*. International journals such as *MIS Quarterly* promote knowledge development in IT services and economics, while *Decision Support Systems* focuses on theoretically supported decision-making articles involving knowledge management. This differs from domestic journals.

[Figure 2: see original paper] and [Figure 3: see original paper] reveal that domestic high-productivity authors include Li Wu and Ai Pengya from Shanghai Jiao Tong University, as well as scholar groups including Liu Zhouying, Zhao Yuying, and Zhu Qinghua. Major research institutions include Wuhan University School of Information Management and China Press and Publication Research Institute. International research institutions include National University of Singapore and Aalto University, with leading scholars such as Y. C. Alton and C. P. Bezemer. Domestic scholars show more group publications, while international publications are more dispersed with fewer cross-disciplinary and cross-institutional collaborations.

In summary, domestic literature volume exceeds international output with stronger growth momentum, reflecting greater research enthusiasm and

capacity. Publication journal types differ, with domestic journals oriented toward library and information science and international journals toward information management and decision-making, indicating spatial distribution differences. Domestic authors and institutions concentrate in universities, while international distribution is more dispersed with more independent authors.

Comparative Analysis of Research Trends Burstiness refers to sudden emergence that attracts researcher attention. Burst terms are keywords with high citation or co-occurrence frequency within a specific period, revealing research hotspots and evolution trends at different stages. [Figure 4: see original paper] shows the top seven burst terms, including burst intensity and time periods. Domestic knowledge payment research began in 2012, with “content payment” having the longest duration and highest burst intensity. Content payment achieves content entrepreneurship by creating knowledge content with reasonable profit models. Subsequently, the sharing economy emerged with internet development, allowing people to obtain economic compensation by sharing experiences. Knowledge payment has profoundly impacted traditional publishing, promoting industry reform. This model essentially represents a new form of knowledge dissemination.

Keyword timeline views reveal thematic evolution and research trends. [Figure 5: see original paper] shows that knowledge payment research emerged in 2016, with related research increasing and deepening over the following five years. With the digital economy’s emergence, research on digital publishing and digital reading developed. Knowledge service research began in 2018, including business model studies of knowledge payment platforms and integration with artificial intelligence and media. From 2018 to 2021, research on knowledge payment intention continuously emerged, with high attention to information and content quality.

[Figure 6: see original paper] shows the burst term map for English literature on knowledge payment from 2010-2021, with nine burst terms including knowledge management, creation, adoption, choice, consumer, and integration, all with burst intensity above 1.3. Knowledge management appeared earliest, while “creation” had the longest duration, indicating knowledge payment can bring creative learning experiences. From 2018 to 2021, “adoption” and “integration” showed high burst intensity, emphasizing that content integration and fusion in knowledge payment products affect consumer choice.

[Figure 7: see original paper] presents the keyword timeline for international knowledge payment research, showing different research focuses across periods that can be divided into three stages: (1) Initial stage (2010-2011) with few publications focusing on knowledge sharing awareness, knowledge engineering construction, technical environment, privacy issues, and online community communication behavior; (2) Stable stage (2012-2016) with deepening research on community Q&A, user trust and continuous intention, knowledge contribution, and knowledge absorption capacity; (3) Development stage (2017-present) with

steady growth in publications and research focus shifting to payment behavior, health information community construction, paid content perceived usefulness, and pricing strategies, showing diversified development.

In summary, based on burst detection results, high-frequency-change burst terms represent frontier terminology. Combining termination times, domestic frontier terms include “content payment,” “content entrepreneurship,” and “knowledge dissemination,” while international frontier terms include “knowledge management,” “adoption,” and “integration,” collectively forming trend keywords in knowledge payment research. Additionally, timeline analysis shows domestic research tends to develop knowledge payment from economic perspectives, while international research covers broader industries with diversified trends.

Comparative Analysis of Research Hotspots In keyword co-occurrence analysis, word frequency and betweenness centrality represent research hotspot distribution. Betweenness centrality measures literature importance by testing each node’s significance in co-occurrence networks. According to Zipf’s law-derived high/low frequency threshold models, the specific high-frequency threshold can be calculated using formula (1), where I represents the number of keywords with frequency 1. Calculations show the Chinese high-frequency keyword threshold is between 9-10, yielding 11 high-frequency terms, while the foreign threshold is 11-12, yielding four high-frequency terms. lists high-frequency keywords and corresponding betweenness centrality values from CNKI and WoS.

High-frequency keywords primarily relate to knowledge, with higher betweenness centrality indicating greater importance. Knowledge payment strongly correlates with knowledge services, while digital publishing represents practical application. AI development provides technical support for knowledge services. In WoS literature, the highest-frequency terms are “community” and “information,” emphasizing community information sharing—different from domestic research that focuses more on human trust, behavior, and community sharing forms.

Domestic Research Hotspot Analysis Through keyword co-occurrence analysis, font size indicates keyword frequency. With parameters set for 2010-2021, one-year time slices, and keyword node types using default thresholds, the CNKI keyword co-occurrence map shows 266 nodes, 505 links, and network density of 0.0143. Clustering yields the keyword cluster map shown in [Figure 8: see original paper] and [Figure 9: see original paper], with Modularity $Q=0.6224$ and Silhouette= 0.9525 , indicating significant and reasonable clustering structure. The nine clusters include Himalaya, knowledge services, shared bicycles, knowledge payment platforms, knowledge payment, live quiz, self-media, knowledge production, and vertical fields, reflecting main research content in recent years. Through organizing themes #0-#8 in [Figure 9: see original paper], current domestic research hotspots can be summarized in four aspects:

- (1) **Development strategy research for knowledge payment platforms like Himalaya.** As primary beneficiaries, platforms need reasonable development and operation strategies. Liu Zhengchi suggests that in unauthorized sharing environments, platforms can reduce interest conflicts and achieve win-win outcomes with knowledge providers by optimizing operational parameters like traffic revenue. Liu Guohui proposes improvements for Himalaya FM from production and dissemination perspectives, including knowledge production review, after-sales service mechanisms, pricing mechanisms, and knowledge product service systems.
- (2) **Evolution from knowledge sharing to knowledge payment.** This transition represents a process of knowledge commodification and the development of copyright awareness among Chinese youth from nothing to something. Xu Yuanyuan argues that copyright awareness emerges from economic types and cultural interaction, making knowledge payment a fusion of economy and culture. Thus, knowledge payment behavior can be viewed as copyright protection behavior. The transition involves consumers moving from free to paid Q&A platforms, with influencing factors including free Q&A-related factors, paid Q&A-related factors, social factors, personal factors, and objective factors.
- (3) **Knowledge payment formats in live streaming and short-video industries.** Live streaming brings transformation and challenges across sectors, serving as an emerging marketing tool. During the pandemic, the “bookstore live streaming fever” phenomenon emerged, where offline bookstores could market through live streaming and develop knowledge payment products for marketing transformation. The emergence of knowledge-based short videos and audio has innovated knowledge payment product formats. Wang Cui explores innovative paths for knowledge short videos on Douyin across content, technology, and marketing models, achieving integrated development between knowledge payment and short-video platforms.
- (4) **Refined development of knowledge production.** Knowledge product production affects every stage of the knowledge payment process. Refined development promotes steady industry development. He Zhiwu argues that Knowledge Payment 2.0 needs to address the relationship between knowledge production and channel integration, with 5G technology better promoting diversified content production and upgrading knowledge consumption. Liu Guo also believes that vertical segmentation of knowledge payment product content facilitates sales.

International Research Hotspot Analysis For WoS keywords, format conversion is unnecessary before co-occurrence analysis—direct CiteSpace operation is possible. Using the same parameters as the CNKI map yields the WoS keyword co-occurrence map ([Figure 10: see original paper]) with 271 nodes, 1,025 links, and network density of 0.028, where larger nodes indicate higher frequency.

Clustering metrics show Modularity $Q=0.8045$ (>0.3) and Silhouette= 0.9373 (>0.7), indicating good clustering. [Figure 11: see original paper] shows 14 clusters including consulting satisfaction, social media era, social capital, knowledge sharing motivation, factors affecting continuous usage intention, quantitative research, and professional knowledge and technology.

Through cluster analysis integration, international knowledge payment research hotspots can be summarized in three aspects:

- (1) **Factors affecting users' continuous usage intention.** International literature frequently mentions “continuance intention” —users' willingness to continue using knowledge payment products. S. Pang et al. find that perceived usefulness and satisfaction significantly affect continuous usage intention. Donghyuk J. O. also attributes MOOC continuance intention to supporting technology level, usage level, perceived usefulness, and user satisfaction. T. Zhou analyzes from social cognitive theory perspective, finding that cognitive factors of outcome expectations, environmental factors of system quality and knowledge quality significantly affect continuous usage intention. These factors relate closely to perceived usefulness and satisfaction and can be analyzed from multiple perspectives.
- (2) **User knowledge sharing motivation research.** With knowledge Q&A communities' emergence, more people share knowledge in these platforms. Financial incentives can enhance users' voluntary knowledge sharing willingness and social participation. At the non-economic level, S. J. Al-Husseini et al. identify attitude and subjective norms as primary factors affecting information sharing motivation, followed by social relationships, trust, and positive attitudes toward helping others. Y. Harb et al. study knowledge sharing motivation among physicians in healthcare contexts, finding that personality traits (extraversion, neuroticism, agreeableness, conscientiousness) and knowledge characteristics (situatedness) significantly affect sharing motivation, demonstrating that knowledge sharing behavior relates to individual personality attributes and social relationships.
- (3) **User payment motivation research.** User groups' payment motivations for knowledge products typically stem from personal needs. Perceiving knowledge deficiency, users seek more efficient acquisition methods. From benefit-cost perspectives, benefits and costs significantly affect perceived value, with reciprocity beliefs playing a moderating role requiring trust to facilitate payment behavior.

Conclusion and Implications

Through keyword cluster analysis, research priorities become clear. [Figure 9: see original paper] and [Figure 11: see original paper] show that domestic and international knowledge payment research hotspots differ. Domestic research focuses on platforms, content, integrated development, and operation models,

with macro-level orientation covering four main hotspots: development trends of platforms like Himalaya, evolution from knowledge sharing to knowledge payment, knowledge payment formats in live streaming/short videos, and refined knowledge production development. International research emphasizes individual users' usage intention, payment motivation, and influencing factors, with micro-level orientation covering three main hotspots: factors affecting continuous usage intention, user payment motivation, and user knowledge sharing motivation. Both domestic and international literature share similar content like perceived usefulness of knowledge payment content and continuous usage intention, employing identical research methods and models such as structural equation modeling and push-pull-anchor models.

Domestic and international knowledge payment research features diverse themes but different perspectives and starting points, yielding distinctive research outcomes. By comparing publication trends, research trends, and hotspots, significant differences emerge. Research emphases vary, with domestic research being more macro-level covering knowledge production to platforms, while international research focuses more on micro-level user groups. Analyzing international research status reveals that domestic research needs to broaden research fields, emphasize methodological and model innovation, and increase attention to user group behavior research to form a complete knowledge payment research system.

Based on these findings, several implications emerge for domestic knowledge payment research:

Emphasize User Perspective Research

International research consistently follows a “people-oriented” principle, focusing on user-related content and behavioral characteristics during knowledge payment processes. Domestic research concentrates on platform operations and services, with less attention to user group motivations. Users are both “beneficiaries” and “providers,” playing crucial roles in knowledge payment. Domestic scholars need to increase focus on user groups and explore deeper, such as not only focusing on order completion on payment platforms but also on customers' effective understanding of knowledge afterward. Additionally, research should incorporate 5G and cloud technologies to enable real-time, direct knowledge dissemination through live streaming and online teaching.

Balance Technical Implementation Issues

While domestic research has made progress, particularly at macro levels, international research emphasizes micro-level perspectives. Domestic research should broaden fields, emphasize methodological innovation, and increase attention to user behavior to form a complete research system.

Strengthen Intellectual Property Protection

Given frequent infringement phenomena in knowledge payment, with difficulties in rights protection, high costs, and long cycles, the Central Committee issued the “Opinion on Strengthening Intellectual Property Protection” in 2020, increas-

ing penalties for infringement and demonstrating government emphasis on IP protection. This requires content creators to enhance IP protection awareness. Compared to abroad, where IP concepts are deeply rooted and the knowledge payment industry has matured with improved systems, China must perfect its IP legal system and actively participate in international IP protection conventions. Protecting knowledge payment product rights facilitates content quality improvement, research quality enhancement, and research 成果转化, promoting deep industry-academia-research integration.

Enhance Cross-Institutional Collaboration

Based on publication patterns in domestic and international knowledge payment research, cross-institutional and cross-disciplinary collaboration remains limited. Such collaboration enables cultural innovation, requiring full communication among institutions on common issues and essentially approaching research from different perspectives to achieve breadth and depth. While maintaining macro-level research, exploration of specific micro-level issues should form a focused research pattern.

Highlight Research Priorities

Knowledge payment research should center on platforms, producers, and consumers to explore integration issues, such as integration between publishing, television, short videos, and knowledge payment, proposing specific measures that are strategically sound at macro levels and operationally feasible at micro levels, forming a prioritized research pattern.

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Author Contributions

Mao Taitian: Provided paper writing guidance, determined research framework, proposed revision suggestions.

Lu Mengzhe: Conducted paper writing, data analysis, and revisions.

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