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Postprint: Research Status and Development Trends of Domestic Internet Knowledge Payment

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Abstract

[Objective/Significance] This study aims to comprehensively understand the research status of China's internet knowledge payment by reviewing relevant studies, revealing hot issues and future research directions in this field. [Method/Process] Using content analysis, 228 literature pieces on China's internet knowledge payment research were systematically reviewed and analyzed, forming four literature clusters: knowledge payment concepts, influencing factors, business models, and network ecology. Based on this, possible development directions for domestic IKP research are proposed. [Results/Conclusions] The study finds: China's internet knowledge payment has formed research concepts with different arguments from the perspectives of e-commerce, behavioral science, and knowledge management; Research on influencing factors is mainly based on knowledge users, knowledge products, and knowledge platforms, aiming to improve the experience of domestic internet knowledge payment users, product quality, and platform services; Business model research on domestic internet knowledge payment, which relies on case analysis and discussion, urgently needs to be enriched; By integrating disputes within and between knowledge producers, knowledge consumers, and knowledge platforms, six categories of research issues triggered by network ecological problems are summarized. Based on the above analysis, development suggestions for China's internet knowledge payment research are proposed.

Full Text

Preamble

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Research Status and Development Trends of Internet Knowledge Payment in China

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Abstract:

[Purpose/Significance] This study aims to comprehensively understand the current research status of Internet knowledge payment in China by systematically reviewing relevant literature, and to identify hot issues and future research directions in this field. [Method/Process] Using content analysis, we systematically reviewed and analyzed 228 Chinese-language studies on Internet knowledge payment, forming four literature clusters: knowledge payment concept, influencing factors, business models, and network ecology. Based on this analysis, we propose potential development directions for domestic IKP research. [Result/Conclusion] The study finds that: Chinese Internet knowledge payment has formed distinct research concepts from the perspectives of e-commerce, behavioral science, and knowledge management; Research on influencing factors primarily focuses on knowledge users, knowledge products, and knowledge platforms to improve user experience, product quality, and platform services; Business model research in China urgently needs enrichment through case analysis and discussion; Six categories of research topics on network ecological issues are summarized based on disputes within and between knowledge producers, consumers, and platforms. Based on these findings, we propose development recommendations for Internet knowledge payment research in China.

Keywords: knowledge payment; influencing factors; business model; network ecology

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1. Introduction

In recent years, China's consumption structure has undergone significant changes, with public expenditure on culture gradually increasing. The Internet knowledge payment industry has achieved rapid development in a short period, with mainstream knowledge payment platforms establishing stable revenue models and large user bases [1]. In the Chinese context, we face a transition from free to paid knowledge, yet the value of free access remains deeply rooted while paid consumption habits have not been widely cultivated [2]. The conflict between Internet users' growing demand for knowledge and the concept of paying for it makes Internet knowledge payment research a topic with distinct Chinese characteristics.

To comprehensively understand research on Internet knowledge payment in China and reveal hot topics and future directions in this field, this study employs content analysis to systematically review and integrate 228 literature sources on Internet Knowledge Payment (IKP). This analysis clarifies the literature objects in China's IKP field, elucidates the concept and origin of Internet knowledge payment, extracts key themes from existing literature, and forms four literature clusters: IKP concept, influencing factors, business models, and network ecology. Based on this framework, we propose potential development directions for domestic IKP research.

The four literature clusters are closely interconnected. The IKP concept provides the theoretical foundation for subsequent research. Research questions based on different conceptual perspectives show significant differences, forming research directions such as influencing factors, business models, and network ecology. Scholars understanding IKP from e-commerce and behavioral science perspectives focus on user and product factors, while those from knowledge management perspectives emphasize platform factors. These studies provide theoretical foundations for business model construction and improvement. Business model and network ecology research represent practical discussions from an applied perspective. On one hand, the emergence and development of IKP business models have triggered network ecological problems and challenges; on the other hand, network ecology regulation and governance guide the healthy growth and 良性 competition of IKP business models. The overall analytical framework for IKP research is shown in Figure 1 [Figure 1: see original paper].

2. Origin and Concept of IKP

2.1 Origin of IKP

Early forms of knowledge payment manifested as education, consulting, and publishing. With the rapid development of mobile Internet, 2016 was recognized as the inaugural year of the knowledge payment industry, attracting widespread attention. Initially, Chinese scholars paid little attention to IKP, but with the emergence of platforms like Ximalaya FM and Zhihu Live, and operational models such as Zhang Xuefeng's online postgraduate entrance exam courses and Fan Deng Reading Club, the industry gained public recognition. The rapid development of Internet knowledge payment demonstrates the importance of knowledge as the primary means of production in contemporary society. As Bell noted, the knowledge society no longer relies on raw labor and production materials; its core characteristic is the compilation of theoretical knowledge, with technology triggering new social structures and relationship transformations [3].

Internet IT technology provides the foundation for online circulation of knowledge products and services, enabling direct market transactions between knowledge producers and consumers. The purpose of IKP is profit-seeking through knowledge production, premised on consumer demand for knowledge products and services. Digital technology is a crucial driver of industrial development,

and Internet IT technology has spawned many new Internet knowledge services and products, prompting scholars from e-commerce, behavioral science, knowledge management, and other fields to actively discuss how to define Internet knowledge payment. Scholars began to seriously examine the phenomenon and concept of IKP in China, contemplating the foundation for its disruptive innovation and rapid development.

2.2 Concept of IKP

Internet knowledge payment is a dissemination model where users share information and obtain benefits through online transactions. Defining Internet knowledge payment has been a key focus of academic research. This paper argues that the concept can be understood from three perspectives: e-commerce, behavioral science, and knowledge management [4] (see Figure 2 [Figure 2: see original paper]):

- (1) **E-commerce perspective:** IKP refers to users paying fees through Internet platforms to acquire specific knowledge [5-6]. This view considers IKP essentially as online transactions—an exchange of knowledge and value between producers and consumers—focusing on users' monetary expenditure to describe and evaluate transactional activities using material wealth to obtain knowledge.
- (2) **Behavioral science perspective:** IKP is the consumption behavior of Internet users toward knowledge products and services [6-7]. This includes: pre-consumption knowledge transaction behavior; mid-consumption knowledge internalization behavior; and post-consumption knowledge diffusion behavior. The pre-consumption stage involves transactions to acquire knowledge and related information, skills, and experiences. The mid-consumption stage is the process of incorporating new knowledge into cognitive structures. The post-consumption stage determines whether knowledge value can be disseminated via the Internet and to what extent, requiring users to process and recreate existing knowledge through diffusion, fostering new technologies and knowledge, and increasing knowledge stock within consumer networks.
- (3) **Knowledge management perspective:** IKP is a new economic model that comprehensively integrates knowledge production, dissemination, services, consumption, and entertainment via the Internet [8]. This elevates IKP to a macro-level business operation model. Research at this level encompasses copyright owners, product interpreters, knowledge leaders, service positioning, sales channels, technical support, and cooperation pathways, with the broadest conceptual scope and object range.

3. Current Status of Domestic IKP Research

Using Chinese journal articles from January 2016 to December 2020 as data sources, we screened 228 research papers and created a keyword cloud of hot

topics in China's IKP research (see Figure 3 [Figure 3: see original paper]) to explore recent research themes and identify pressing practical problems. Based on literature review and keyword cloud analysis, we summarize IKP research achievements into three hot directions: influencing factors, business models, and network ecology.

3.1 Research on IKP Influencing Factors

Keywords such as influencing factors, payment willingness, and knowledge services appear as central themes, indicating that research on IKP influencing factors will become one of the dominant future research directions. Table 1 summarizes studies on IKP influencing factors. Scholars have conducted research from different starting points, with varying factor selections that share internal connections. We categorize factors influencing users' IKP behavior into user subjective factors, knowledge product factors, and knowledge platform factors.

3.1.1 User Subjective Factors User subjective factors include gender, age, income, education level, residence [9], learning ability, curiosity, desire for knowledge, expectation confirmation, individual needs, individual cognition [10], satisfaction, perceived benefits and risks [11], first-time experience, entertainment enjoyment, reciprocity beliefs [12], sunk costs [13], and task pressure [14]. Demographic factors are typical variables. For instance, Zhang Zheng et al. [25] found that online learning users' gender, age, education, and income had no significant effect on payment willingness, while Du Zhitao et al. [9] reached opposite conclusions, finding these variables significantly affected online knowledge payment behavior. Subjective factors are important reasons for differences in IKP user needs, showing obvious "individual differences." When using college students as examples, curiosity and desire for knowledge are formation factors for payment willingness in online Q&A communities [26], but needs regarding product content and price show group-specific characteristics (e.g., daily expenditure constraints, low price acceptance [27]). Grade, monthly consumption, and usage frequency also affect perceived usefulness, ease of use, and enjoyment of knowledge products [26]. For online medical consultation users, information-seeking follows a regular pattern of search-inquiry-resolution-implementation-sharing, with health information demands driving knowledge reuse [28].

3.1.2 Knowledge Product Factors Knowledge products are key to retaining IKP users. Studies often use terms like "continuance," "switching," and "escape" to describe user behavior. Factors such as professionalism, authority, and content quality affect IKP demand satisfaction [4]. Users judge products based on creator profiles, verification status, previous answers, upvotes, thanks, collections, articles, Live sessions, and honorary titles [12]. Research shows that content quality, utility, and user recognition are core conditions for responding to user needs [4]. Zhao Yuxiang et al.'s study on questioners' switching behavior from free to paid platforms revealed that economic cost is an important factor affecting switching intention, with uncertainty costs arising from

information asymmetry [30]. These studies examine both positive perspectives (continuance, repetition) and negative perspectives (exit, switching, lurking) to promote better alignment between paid knowledge products and user needs.

3.1.3 Knowledge Platform Factors Knowledge platform construction supports IKP, with related factor research helping platforms formulate organizational plans and improvement strategies to enhance rapid monetization and precision marketing capabilities. Scholars focus on: How platforms vertically and precisely meet user needs. Analysis of “Dedao APP” comments found that platform function refinement and upgrades are major factors affecting user satisfaction [16]. User portraits for Zhihu Live were constructed to segment paid users into loyal value users, dormant churned users, social economy users, demand potential users, and emerging incentive-needed users [21], improving recommendation mechanisms and precision marketing. How platforms enhance service value-added capabilities. Research found that platform service quality and personalized demand satisfaction positively affect alleviating knowledge anxiety and resisting knowledge inflation [22]. Platforms adjust pricing strategies considering customization levels and supply-demand uncertainties [18-19] to balance platform revenue and consumer value perception.

3.2 Research on IKP Business Models

High-frequency keywords such as business model, profit model, knowledge monetization, and content payment indicate that as an emerging phenomenon, the completeness, sustainability, and replicability of IKP business models remain debatable. Scholars view IKP as an emerging business form, conducting rich case studies on platform enterprises like Luogic Talk Show, Ximalaya, Zhihu, Guokr, and Hundun University [32], discussing main characteristics of internal/external resources, value propositions, value networks, marketing, and revenue schemes, providing successful references for user habit cultivation, product knowledge value, delivery forms, and corporate knowledge credit [33].

3.2.1 Classification of IKP Business Models Domestic scholars classify IKP business models into knowledge e-commerce, community-based, and content reward types. Knowledge e-commerce comprises comprehensive or vertical content platforms selling courses and audiobooks. Community-based models operate high-quality communities, achieving knowledge monetization through sharing, interaction, and content creation. Content reward models are generally open creative communities where anyone can create content and profit through paid access or rewards. See Table 2 .

Case studies employ single-case and multi-case methods. Single-case studies are relatively abundant, while multi-case studies are rare. Due to different platform operational characteristics, interaction mechanisms, and service content, researchers continuously adjust their focus. Typical platforms have rich service methods, including column subscriptions and memberships (Migu Read-

ing), paid consultations (QQ Reading), micro-courses and fixed tuition (Hundun University), etc.

- (1) **Single-case studies** comprehensively analyze typical platforms' business models. For Zhihu as a community-based platform, scholars analyzed systematic mechanisms for weakening information overload effects and dynamic evolution characteristics of information generation, selection, and dissemination [36]. WeChat Official Accounts using content rewards for revenue were also discussed as 典型案例, particularly regarding platform ecological construction of information, information users, IT, and information environment.
- (2) **Multi-case studies** compare different platforms' business models, presenting respective characteristics, features, advantages, and disadvantages. Dual-case studies compared Fenda and Zhihu's paid service from five layers: strategic, scope, structure, framework, and presentation [37]. Other scholars analyzed three cases—Ximalaya FM, Dedao APP, and Zhihu Live—to examine continuous growth from institutional entrepreneurship to differentiated competition [38]. Five mobile reading apps (Zhangyue, QQ Reading, Migu Reading, Shuqi Novel, Baidu Reading) were compared regarding payment forms, promotions, and payment methods.

3.2.2 Optimization of IKP Business Models The three business model types show divergence, presenting two development directions: traditional mass-oriented and non-traditional niche-oriented. The traditional mass-oriented approach is the mainstay of IKP business model innovation, while the non-traditional niche-oriented approach serves as a supplement, with IKP gradually expanding or shifting from mass to niche markets.

Mass-oriented models have “course,” “exam,” and “discipline” characteristics, maintaining broad research value. These mainly target online education websites and apps, aiming to provide extensive, comprehensive, personalized, and scenario-based educational services. For example, research found that danmaku (bullet comments) in online education videos enhance user engagement and activity cycles, supporting real-time interaction between users and video content [39], suggesting danmaku as an optimization approach for social interaction design in IKP business models. During the COVID-19 pandemic, remote education software and information platforms were rapidly promoted, demonstrating enormous practical value [40].

Niche models have “de-coursification,” “de-disciplinization,” and “de-examination” characteristics, serving specific groups such as audiobook enthusiasts (Fan Deng Reading Club, Datang Lei Yin Temple) [41] and fans of knowledge leaders (Fan Deng, Liang Hongda) [13]. The corresponding optimization goal is to provide more vertical, segmented, and precise knowledge services, meeting audience needs across life, travel, entertainment, health, arts,

humanities, society, nature, and technology. Fan Deng Reading Club, for instance, achieves commercial benefits through community value monetization, connecting online and offline resources to build comprehensive community communication models with fan economy and community operation characteristics [13, 41], highlighting both integration and contrast between knowledge payment and online education.

3.3 Research on IKP Network Ecology

Keywords such as digital publishing, sharing economy, digital economy, and copyright protection in the keyword cloud reflect IKP network ecology research. IKP network ecology refers to a stable, dynamic, balanced system formed by network subjects acquiring, organizing, storing, updating, exchanging, sharing, applying, and innovating knowledge in cyberspace and on IKP platforms, comprising network subjects, information/knowledge, technology, cultural environment, and other factors. Ecological problems mainly manifest in six relationships:

Disputes between knowledge producers and platforms. Platforms create “private rules” on copyright to accommodate their business models. Scholars study electronic contracts and drafted rules (e.g., exclusive original and co-created content, platform’s free use of content, proxy rights enforcement) [42], subject interest conflicts, economic game theory [43], prisoner’s dilemmas, copyright contradictions, and resolution strategies [44].

Disputes between knowledge consumers and platforms. Consumers believe IKP market mechanisms have defects [45], making knowledge product/service acquisition and platform selection inconsistent. Research explores reasons for these defects: China lacks legal traditions for Internet knowledge payment, emphasizing knowledge’s educational function while neglecting intellectual property protection [4]. After reform and opening-up, China established a relatively complete IP protection system, but due to limited legal popularization and enforcement, citizens haven’t formed legal concepts for IKP [46]. Additionally, long-term free Internet consumption habits make the transition to payment difficult [12].

Disputes between knowledge producers and consumers. As an information resource, knowledge has high fixed costs but low dissemination costs. After obtaining products, consumers may retain and “freely” share them via storage devices (mobile hard drives, CDs, PCs, cloud storage), infringing upon producers’ labor 成果. Research focuses on consumers’ dissemination strategies, payment risks, and payment systems, and producers’ rights protection costs, value risks, and attitude risks [47-49].

Disputes among knowledge producers. To enhance content output capabilities, producers may engage in plagiarism, misappropriation, and shoddy production, causing vicious competition [50] and adverse selection effects [51].

Research covers original interest losses, counterfeiting [52], infringement conflicts, innovation subjects' positions and demands, and IP legal norms [50].

Disputes among knowledge consumers. Communication about product information among consumers triggers psychological imbalance in high-paying users, leading them to avoid or cancel future IKP decisions. Research issues include customization levels and substitutability of products/services, differential pricing strategies, price discrimination, and consumers' free vs. paid choices [18-19, 30].

Disputes among knowledge platforms. Original platforms cannot detect infringement by counterfeit platforms, increasing consumers' motivation to search for pirated products [52]. Scholars recommend improving IP legal systems, strengthening protection, holding pirate platforms accountable, and reducing risks and costs for original platforms.

4. Development Trends of Domestic IKP Research

4.1 Research Based on IKP Concept

This paper summarizes three conceptual interpretations of IKP, suggesting future research should select higher-level IKP constructs as theoretical starting points to expand perspectives and scope. Relevant research directions include:

- (1) **Research on factors affecting user knowledge internalization and diffusion.** Different conceptual perspectives yield different overall benefits. It's necessary to study what factors affect knowledge internalization and diffusion and whether they help platforms create value. This requires moving beyond monotonic research perspectives that use order completion as the sole criterion for effectiveness, instead incorporating post-delivery user experiences and subsequent behaviors, extending to their impact mechanisms on IKP business models.
- (2) **Expanding IKP product application scenarios from an applied perspective.** Technology innovation is an eternal theme of information science in the intelligent era and a key task for enhancing IKP value creation. Scholars and platform managers should accelerate integration of emerging technologies (virtual reality, augmented reality, blockchain) with IKP to achieve precise user information push and develop targeted products and services.

4.2 Research Based on IKP Influencing Factors

This paper clarifies IKP influencing factors from user, product, and platform perspectives, with methods including literature review, multiple regression, grounded theory, and surveys. In the post-pandemic era, China's IKP industry is gradually shifting to paid models. Future research should:

- (1) **Employ diverse analytical methods.** IKP research emphasizes practicality, requiring researchers to stay close to subjects. Traditional multiple regression focuses on individual variables' net effects, but IKP issues involving user cognition, information behavior, and platform innovation performance are influenced by both intrinsic knowledge factors (content quality, utility, legitimacy) and complex extrinsic contextual factors (social interaction, opinion leaders, group norms, IP protection). Methods like field research, configuration analysis, experimental studies, and case analysis should be used to deeply analyze influencing factors, excavate knowledge value, cultivate payment habits, improve service quality, and optimize IKP layout.
- (2) **Build precise knowledge demand matching mechanisms.** Existing research inadequately addresses fine-grained user demand mining and precise matching mechanisms. User profiling has become an intelligent auxiliary tool for user management and demand matching. Scholars should leverage library and information science advantages (especially knowledge management and data mining) to integrate text data, behavioral data, transaction data, and content preference data, capturing implicit behavior patterns, personalities, and habits using text mining, machine learning, and clustering algorithms to construct panoramic user profiles.

4.3 Research Based on IKP Business Models

This paper introduces how scholars classify IKP business models and conduct targeted research. The most controversial topic remains “free vs. paid.” Platform choices significantly impact profitability, revenue methods, user scale, and social benefits. Future directions include:

- (1) **Accelerating practical applications under free and paid models.** The industry needs reliable evidence on which business models are most effective: free, paid, or hybrid; which is optimal; and how to implement competitive business plans across production, sales, and finance. Case and empirical studies are urgently needed to enhance user experience and promote healthy industry ecology development.
- (2) **Research on IKP business model value creation mechanisms.** This requires scholars to effectively grasp core consumer needs in different models, assist enterprises in positioning value propositions, achieve mutual recognition and reasonable value distribution among stakeholders, enhance consumer value perception, improve platform recognition and user scale, and provide opportunities for dynamic, sustainable community aggregation.

4.4 Research Based on IKP Network Ecology

This paper proposes IKP network ecological issues arising from disputes among producers, consumers, and platforms. Government departments should collab-

orate with scholars in library science, law, and economics for in-depth research to determine appropriate IP protection intensity and formulate moderate protection and network ecology strategies. Future directions include:

- (1) **Research on the impact mechanism of IP protection on knowledge innovation in the Chinese context.** China's IP protection intensity must suit national conditions. The government should establish legal, regulatory, social service, and copyright protection alliance systems to safeguard IKP copyright. Technology empowerment should solve copyright protection challenges, strengthen industry copyright layout, and balance effective knowledge innovation, fair competition, and controllable enforcement costs.
- (2) **Constructing moderate IP systems and network ecology strategies.** As network centers integrating and distributing open knowledge resources, platforms require unique IP management models [53]. Strategies need expanded cooperation between producers and platforms, improved IP protection mechanisms, evaluation standards, governance methods, and digital copyright protection technologies to jointly support healthy industry development and purify the online cultural environment.

Internet IT technology is a crucial basis for IKP transformation, enabling Chinese citizens to access information and knowledge more quickly, accurately, and personalizedly, improving national education levels and cultural literacy. China's IKP will enter a strategic high-speed development period in the next 5-10 years. During COVID-19, while many industries struggled, "Internet + Education" driven IKP showed rapid growth momentum. This paper analyzes and distills interconnected scientific issues, providing a solid framework for IKP research. Future work requires more visionary library and information science experts to address theoretical and practical problems through funded projects, seizing opportunities and challenges in China's IKP context.

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

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