Current Status, Challenges, and Countermeasures of Intellectual Property Information Services in Chinese Universities: Postprint

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Abstract

[Purpose/Significance] Intellectual property is an important manifestation of economic, scientific, technological, and cultural strength, and has become a strategic resource contested by nations. Against the backdrop of building an intellectual property powerhouse, there is an urgent need to enhance the capacity and level of intellectual property information services in universities to support scientific and technological innovation and the "Double First-Class" initiative.

[Methods/Process] Through analyzing the current status of intellectual property information services in universities, this study summarizes the problems faced in carrying out such services and proposes solutions.

[Results/Conclusion] To address the challenges faced by university intellectual property information services, recommendations include reorienting research evaluation, strengthening intellectual property information resource development, establishing a standard system for intellectual property information services, intensifying talent cultivation, integrating the entire industry-academia-research chain, and effectively leveraging big data and artificial intelligence technologies.

Full Text

Current Situation, Difficulties and Countermeasures of Intellectual Property Information Services in Chinese Universities

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Abstract

[**Purpose/Significance**] Intellectual property (IP) serves as a crucial manifestation of economic, technological, and cultural strength, and has become a strategic resource that countries worldwide compete to acquire. Against the backdrop of building China into an IP powerhouse, there is an urgent need to enhance the capacity and quality of university IP information services to support technological innovation and the "Double First-Class" university initiative. [**Method/Process**] This paper analyzes the current state of university IP information services, summarizes the challenges faced in developing these services, and proposes solutions. [**Result/Conclusion**] To address the dilemmas confronting university IP information services, the paper recommends changing research evaluation orientations, strengthening the construction of IP information resources, establishing a standard system for IP information services, intensifying talent cultivation efforts, integrating the entire industry-university-research chain, and effectively utilizing big data and artificial intelligence technologies.

Keywords: intellectual property; information services; information resources
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As global economic integration accelerates and market competition intensifies, intellectual property has emerged as a strategic resource for building core competitiveness, with IP issues becoming critical to high-tech and strategic competition among nations. To enhance China's IP creation, utilization, protection, and management capabilities and build an innovative country, the State Council issued the *National Intellectual Property Strategy Outline* in 2008, marking the formal elevation of IP strategy to a national-level priority. After a decade of development, China's IP strategy has advanced steadily with remarkable achievements, establishing the country as a major IP power and progressively moving toward becoming an IP powerhouse.

Intellectual property information services encompass a range of information services oriented toward IP, including information resource services, patent information retrieval, patent information analysis, and IP database or information system construction. These services constitute vital support for IP work, playing a significant role in the effective utilization of IP information resources, cultivating high-value IP, promoting IP transformation, and seizing the commanding heights of technological innovation. Comprehensively improving IP information service capabilities is essential for China's journey toward becoming an IP powerhouse. As the main force in basic research and original innovation in high-tech fields, universities represent an important source of intellectual property. Perfecting university IP information service systems, improving IP quality, promoting scientific and technological innovation, and supporting the "Double First-Class" initiative are critical tasks currently facing university IP information services.

1. Current Situation of University IP Information Services

1.1 Favorable Timing for IP Information Service Development

In recent years, relevant state departments have attached great importance to IP information services, ushering in a "spring" for their development in universities. In 2012, the State Intellectual Property Office (SIPO), together with the National Development and Reform Commission and other departments, released the *Guiding Opinions on Accelerating the Cultivation and Development of the IP Service Industry*. In 2014, SIPO and other departments jointly issued the *Guiding Opinions on the Construction of an IP Service Standards System*. In 2016, the State Council published the *13th Five-Year Plan for National IP Protection and Utilization*, which explicitly called for increasing IP information service outlets and strengthening the IP information service capacity of public libraries and university libraries. In January 2017, the *Intellectual Property Management Standards for Higher Education Institutions*, jointly formulated by SIPO and other departments, officially took effect, recommending that universities establish IP service support institutions, which could be housed in libraries or other university departments responsible for information services. In January 2018, SIPO and the Ministry of Education jointly issued the *Implementation Measures for the Construction of University IP Information Service Centers*, elaborating in detail on the establishment, positioning, and service content of these centers and clarifying their mission to provide full-process services for IP creation, utilization, protection, and management in universities, thereby supporting collaborative innovation and the construction of advantageous disciplines.

Universities' own development needs have also created important opportunities for IP information services. In 2015, the State Council issued the *Overall Plan for Coordinated Development of World-Class Universities and First-Class Disciplines*, proposing that by the middle of this century, a number of universities and disciplines should rank among the world's best. In 2017, the Ministry of Education and two other departments released the list of "Double First-Class" construction universities and disciplines. Since then, many universities have formulated construction plans, prioritizing the "Double First-Class" initiative in their development agendas. This initiative cannot succeed without intellectual property and its information services. As specialized information services focusing on the development and utilization of IP information resources, IP information services provide crucial support for scientific research, discipline construction, decision-making, talent cultivation, and IP transformation in universities. Recognizing the significance of this work, many universities have actively established IP information service centers on campus, greatly advancing the development of university IP information services.

1.2 Strong Demand for IP Information Services

In today's world of rapid technological development and the rise of the knowledge economy, intellectual property, as codified knowledge, has attracted increasing attention from multiple stakeholders. At the international level, IP has become a common means for many countries to secure significant global benefits, an important tool in international competition, and a key factor in shaping a new international order. At the national level, IP is a core element for enhancing competitiveness, capable of transforming technological advantages into market advantages and serving as powerful support for an innovative country. For universities, IP can effectively protect research achievements, act as a catalyst for independent innovation, and serve as a core indicator reflecting innovative capacity and research strength. Therefore, improving the capacity and quality of university IP information services to support IP work is not only necessary for university innovation and development but also for university and national technological competition.

University IP information services are closely linked to scientific research, talent cultivation, social services, and cultural inheritance. Universities exhibit diverse forms of IP, with patents being the primary form of research output. According to statistics from SIPO, university patent applications have continued to grow rapidly over the past decade, with growth slowing in 2017 but remaining robust [Figure 1: see original paper]. In the last ten years, total university patent applications reached 1.6638 million, with 336,200 applications in 2017 alone, accounting for 20.21% of the ten-year total. After applying for patents, universities must conduct follow-up work on authorization tracking, maintenance, and transformation, demonstrating the urgent need for patent information services throughout the research process. External institutions also have pressing needs, such as government overall planning and policy formulation, enterprise technological innovation and upgrading, and research institution technology layout and independent development. Building an IP powerhouse requires IP talent as the primary resource. Currently, insufficient IP information service capacity in universities is an important factor constraining service quality and effectiveness, which in turn limits the output of high-quality IP.

1.3 Abundant IP Information Service Resources

Since the implementation of the Patent Law of the People's Republic of China, universities have accumulated rich IP information resources, particularly patent information resources. SIPO statistics show that university patent authorizations have grown steadily over the past decade, increasing approximately eightfold by 2017 compared to 2008. In the last ten years, total university patent authorizations reached 856,400, representing 51.47% of total applications. In 2017 alone, university patent authorizations reached 170,400, accounting for 19.90% of the ten-year total. In recent years, to improve the credibility of the patent system and promote overall patent quality enhancement, SIPO has adopted policy guidance, raised standards, and implemented stricter exami-

nation, causing patent authorization rates to drop sharply. For universities, however, patent authorization rates have remained relatively stable, especially for invention patents, which have maintained an authorization rate of around 40.00%, indicating relatively high quality. Utility model and design patent authorization rates have fluctuated significantly, dropping noticeably in 2016 and declining more slowly in 2017, though their quality remains concerning. By the end of 2017, Chinese universities held 476,300 valid patents, including 258,000 valid invention patents (54% of the total), representing 18.3% of domestic valid invention patents. This demonstrates the enormous scale of university patent information resources [Figure 2: see original paper][Figure 3: see original paper].

Libraries, as university centers for literature resources and information services, provide resource guarantees for IP information services, primarily in literature resources, human resources, and user resources. Literature resources include print and electronic resources, with libraries investing substantial funds annually to purchase and update them. In 2017, 102 libraries with Ministry of Education science and technology novelty search station qualifications invested 1.55 billion yuan in resource construction, averaging 15 million yuan per library. Human resources refer to IP information service personnel reserves. Libraries have cultivated experienced information service personnel through years of providing science and technology novelty searches, document delivery, citation verification, training, and lectures both on and off campus. User resources refer to libraries' stable user base and large pool of potential users. With the transformation from passive to active service and the application of emerging technologies, the service audience can be further expanded.

1.4 Initial Scale of IP Information Services

The *Guiding Opinions on Accelerating the Cultivation and Development of the IP Service Industry*, issued by SIPO and other departments in 2012, identified IP information services as one of six key development areas in the IP service industry, with important development directions aligning with university library operations such as information retrieval, analysis, data processing, and literature translation. After years of development, libraries have significantly improved their conditions, with service capacity and quality widely recognized by internal and external stakeholders. Libraries' visibility and participation in university development and construction have greatly increased. In the environment of deepening national IP strategy implementation and improving university IP public service networks, university libraries undoubtedly play the role of IP information service institutions.

IP information services have become an important direction for business expansion in university libraries. The vast majority of libraries with Ministry of Education science and technology novelty search station qualifications have already launched basic IP information services such as patent searches, patent novelty searches, and IP knowledge training. Some libraries have developed deeper services including patent mining and layout, patent navigation, patent

early warning, decision-making consultation, and patent database construction in response to internal and external demands. Others have explored embedded service models within departments and research teams, providing macro-level guidance and assistance for research processes and needs, and micro-level, highly specific research support and assistance targeting projects and topics. Following the release of the *Implementation Measures for the Construction of University IP Information Service Centers*, many universities have established IP information service centers based in libraries. In June 2018, the "University IP Information Service Center Alliance," initiated by Tongji University, Peking University, Tsinghua University, and Shanghai Jiao Tong University, was officially established in Shanghai, with 22 universities nationwide becoming council members, marking a new stage for university IP information services.

2. Difficulties Facing University IP Information Services

2.1 The Status of IP Work Needs Further Enhancement

Since the implementation of the national IP strategy, university IP quantity has increased substantially, and IP protection has improved significantly. More universities have recognized the catalytic role of IP in technological innovation, leading to a notable rise in the status of IP work. However, numerous problems remain. SIPO statistics show that university patent maintenance rates have declined year by year over the past five years, reaching a ten-year low in 2017. Among the three types of patents, although invention patent maintenance rates have remained above 60.00%, they are also declining. Design patent maintenance rates have declined most noticeably, dropping significantly since 2011 and remaining in decline, though slowing in recent years, with rates now below 30.00% [Figure 4: see original paper]. Additionally, overall university IP quality remains low, transformation results are unsatisfactory, and protection and service capabilities lag behind developed countries. Insufficient attention to IP work is an important cause of these phenomena.

The *Intellectual Property Management Standards for Higher Education Institutions* represents a pioneering attempt at standardizing IP management in Chinese universities and serves as an important reference document. Many universities have seized the opportunity to implement these standards, but the number doing so is minimal compared to those producing IP. The reason, again, is insufficient university attention. Implementation requires multi-department coordination and necessary human, financial, and material investment—an incremental, long-term commitment. Results are not immediate, and since the standard is voluntary, universities lack motivation. To better develop IP information services, transform university IP from quantity to quality and from large to strong, and increase IP's contribution to economic development and technological innovation, raising the status of IP work is the primary prerequisite. Only with sufficient attention can university IP information services be carried out efficiently and with high quality.

2.2 Scattered IP Information Resources

University IP work involves IP management agencies, IP service support institutions, IP operation agencies, and other departments. These departments mostly operate independently, with overlapping functions despite different positioning, creating confusion and interwoven processes that scatter IP information resources across multiple units. Additionally, research teams, faculty, and students, as primary sources of IP, generate large amounts of IP annually, producing much valuable information. Without resource coordination departments and personnel, these IP information resources remain disorderly distributed. To improve this situation and integrate university IP information resources, the *Intellectual Property Management Standards for Higher Education Institutions* proposes establishing IP specialist positions responsible for IP management in research projects. Some universities have attempted this, but results have been limited, and the problem of scattered resources persists.

IP information services are based on the integration, mining, development, and utilization of IP information resources. This scattering creates significant obstacles. While diverse information channels facilitate access to explicit information resources, they also increase the difficulty of filtering and screening, requiring strong discernment from service personnel. Tacit information resources are inherently difficult to discover and utilize, and resource scattering further increases acquisition challenges, requiring not only departmental coordination but also technical tools and analytical instruments, placing higher demands on service personnel capabilities. As the foundation for service delivery, resolving resource dispersion is a prerequisite for launching services.

2.3 Lack of IP Information Service Standards

University IP information services in China remain in the initial stage, with universities still exploring best practices. No unified service standards or relatively mature service experiences and models exist domestically. As early as 2013, the Standardization Administration and other departments explicitly proposed in the *Guiding Opinions on Standards Formulation and Revision for High-tech Service Industries* the construction of an IP service standards system, focusing on developing standards for six categories of IP services including IP information services. However, constrained by backward IP information resource construction and lagging IP talent cultivation, China's IP information service standardization suffers from few established standards and a lack of systematic and orderly standardization research. Although relevant departments have formulated and implemented standards such as *Classification and Codes for IP Documents and Information*, *Basic Vocabulary for IP Documents and Information*, these still cannot meet actual demands.

To date, no standard system suitable for university IP information services has been established. Without corresponding standard guidance, personnel quality and resource construction levels vary widely, service content and categories

are poorly defined, service processes and deliverables differ significantly, and systems for service evaluation, assessment, rewards and penalties, supervision, and feedback tracking are inadequate. Compared to traditional information services, IP information services require greater human, financial, and material investment, with most universities defining them as paid services with self-determined fees and standards. To enhance the value and efficiency of university IP information services, create a favorable development environment, and ensure more standardized and orderly operations, constructing an IP information service standard system would benefit the healthy development of these services.

2.4 IP Talent Shortage

The *National Intellectual Property Strategy Outline* identifies strengthening IP talent 队伍建设 as one of seven strategic measures, explicitly requiring large-scale cultivation of IP professionals at all levels. Data show that by the end of the 12th Five-Year Plan period, the national IP talent pool had exceeded 150,000, quadrupling compared to the end of the 11th Five-Year Plan period. Despite this rapid growth, high-level IP talent remains scarce, particularly high-caliber personnel proficient in IP laws and regulations, familiar with international rules, and possessing high professional competence and practical skills. IP information integrates technical, economic, and legal information, making IP information services knowledge-intensive and placing high demands on practitioners' knowledge reserves and practical abilities. As service demands continue to grow, the shortage of high-quality professional service talent has become increasingly prominent, constraining the development of IP information services.

Universities are the primary bases for IP talent cultivation, with many establishing IP schools and offering relevant courses. However, university-trained IP talent focuses mainly on law, with insufficient cultivation of management, operation, service, and research personnel, creating a disconnect between talent cultivation and social demand. Talent is the soul of IP information services, and high-quality professionals can effectively promote service development. Currently, university IP information services concentrate on basic services such as patent novelty searches, patent retrieval, and IP training and lectures. The lack of talent makes it difficult for universities to carry out deep-level IP information services. As libraries evolve and their role in universities transforms, their awareness and ability to support teaching and research have strengthened. IP information services serve as an important link for library participation in university construction, but the shortage of service talent has become a bottleneck constraining library development.

3. Countermeasures

3.1 Emphasize IP Work and Change Research Evaluation Orientation

China is currently in a critical stage of reform. As reform deepens and opening up expands, the importance of IP continues to grow. To comprehensively de-

velop university IP information services, support university research and teaching, and achieve coordinated development of IP quantity and quality, raising the status of IP work is the primary prerequisite. Changing research evaluation orientation, abandoning simplistic, singular, and utilitarian evaluation systems, and increasing the weight of IP in research evaluation are effective means to enhance university attention to IP work. Research evaluation systems are important tools for assessing university and researcher contributions, playing a "commanding baton" role. Current evaluation mainly employs quantitative bibliometric methods and qualitative peer review, assigning weights to indicators, classifying academic achievements, and conducting assessments. While this approach has certain rationality, it also has problems such as the rationality of indicator design, accuracy of data collection, and interpersonal interference in peer review.

Scientific and reasonable research evaluation systems are important guarantees for correcting academic atmosphere and promoting healthy, orderly research development. In current systems, although IP is included, its weight is not high, and IP quality evaluation and value assessment are relatively weak. In the published fourth-round national university discipline evaluation indicator system, IP appears as a third-level indicator under the second-level indicator of research achievements, focusing mainly on patent transformation. Evaluation content varies by discipline but remains primarily quantity-based. Increasing IP's weight in research evaluation systems is a powerful lever for truly raising its status. In October 2018, the Ministry of Science and Technology, Ministry of Education, and three other departments jointly issued a notice launching a special campaign to eliminate "SCI-only," "title-only," "education-only," and "award-only" evaluation practices, promoting a representative work evaluation system that emphasizes the quality, contribution, and impact of 标志性成果. This process should seize the opportunity to extend representative works to representative IP, with multi-dimensional evaluation representing another important way for universities to emphasize IP work.

3.2 Strengthen IP Information Resource Construction and Enhance Resource Utilization

The completeness of IP information resource construction is a prerequisite for ensuring the objectivity of IP information services. Different universities should, according to their funding conditions and disciplinary characteristics, purchase commercial patent databases and build specialized patent databases. For existing IP information resources, universities should integrate them, which can not only efficiently allocate resources, improve utilization, and accelerate resource sharing and dissemination but also enable more flexible service models. Some domestic universities have already attempted this. For example, Peking University Library has compiled various national patent office service platforms and fee-based patent retrieval and analysis databases such as Innography, and is exploring a disciplinary service platform model to build a patent information service

platform integrating resource aggregation, knowledge popularization, and disciplinary hotspot patent analysis. When constructing IP information resource platforms, universities should combine their actual conditions and development directions. Comprehensive universities with capabilities can build fully functional platforms, while distinctive universities can build platforms around their specialties and local industries. Relevant state departments should provide top-level design and formulate guiding policies to encourage universities to build specialized resource platforms and develop analytical tools independently to support disciplinary development and innovative research.

University IP work is often carried out by multiple departments. The *Intellectual Property Management Standards for Higher Education Institutions* delineates the functions of IP management, operation, and service support agencies, which universities can use as a reference. Clear departmental responsibilities optimize resource allocation, avoid business conflicts, and facilitate macro-level integration of IP information resources. Additionally, the concept of IP specialists proposed in the standards represents an innovative attempt to integrate disordered IP information resources in departments and research teams. Beyond assigning IP specialists to departments and research teams, university IP offices should also deploy IP specialists to communicate and coordinate with specialists in other departments to ensure the timeliness and smooth flow of IP information.

3.3 Construct an IP Information Service Standard System to Improve Service Capacity and Level

Standardization is an important means to promote the healthy development of IP information services and a hallmark of high-level, professional service development. Developed countries have generally formed complete, multi-level service systems comprising government agencies, public welfare entities, and private profit-making organizations. Chinese departments have also explored this path, with SIPO formulating and implementing documents such as *Basic Vocabulary for IP Documents and Information*, *Patent Document Data Specifications*, *Patent Document Information Service Guidelines*, and *Rules for English Translation and Processing of Chinese Patent Documents*. However, compared with developed countries, China's IP information service standardization process remains backward, lacking systematic, comprehensive, and leading advancement.

The *Guiding Opinions on the Construction of an IP Service Standards System*, jointly issued by SIPO and other departments in 2014, identified the main tasks of IP information service standard formulation and revision, particularly emphasizing the acceleration of standards for IP information retrieval and analysis services. To date, standardization progress has been relatively slow. Accelerating the construction of a scientific and reasonable IP information service standard system to optimize service processes and provide practical guidance is imperative. To ensure standards' operability and practicality, systematic investigation and research are essential, as standards formulation, implementation,

and improvement complement research. Relevant state departments should lead research on IP information service standardization, laying a theoretical foundation for standard system construction. Based on this, they should formulate a series of practical, implementable standards and specifications, along with feedback and dynamic adjustment mechanisms for the standard system. Additionally, policies should be introduced to provide organizational leadership, funding support, and talent cultivation guarantees for standardization implementation, thereby accelerating China's IP information service standardization process.

3.4 Strengthen Talent Cultivation and Develop Various IP Information Service Professionals

At present, China's IP information service talent 队伍 exhibits characteristics of insufficient quantity, suboptimal structure, and inadequate service capacity and level. Scholars have proposed that talent 队伍建设 should focus on expanding talent scale while emphasizing the cultivation of high-level, composite patent information service professionals. Relative to growing service demand, China's IP information service talent shortage is indeed substantial. Building on the existing foundation, strengthening talent cultivation and increasing talent numbers are primary tasks, but blind expansion should be avoided. IP information service talent should be segmented into categories such as IP specialists, practical talent, research talent, and management talent, with cultivation goals and plans developed accordingly. A healthy IP information service talent 队伍 should present a positive triangular structure, with high-level and leading talent, backbone talent, and basic talent increasing from top to bottom.

A reasonable talent 梯队 avoids talent gaps, ensures service continuity, and creates a talent magnet effect. As strategic highlands for talent cultivation, universities gather large numbers of high-level professionals. When cultivating IP information service talent, three aspects should be considered: First, strengthen IP discipline education by establishing relevant degree programs and improving curriculum design. In addition to cultivating IP law experts, universities should train professionals proficient in international rules, familiar with market patterns, and possessing high practical competence and academic levels, thereby strengthening talent 队伍建设 from the source. Second, strengthen training of existing reserve personnel. University libraries have cultivated experienced, skilled information service personnel through science and technology novelty searches and disciplinary services, providing a good foundation for IP information services. With upgraded knowledge structures and targeted skills training, these personnel can quickly assume IP information service responsibilities. Third, universities can recruit talent from external law firms and consulting service agencies to 充实 and improve their IP information service talent 队伍.

3.5 Integrate the Entire Industry-University-Research Chain to Promote University IP Transformation

Participating in industry-university-research collaborative innovation and promoting IP transformation are important tasks for IP information service institutions. Industry-university-research collaboration is market-oriented, with "industry" as the goal, "university" as the foundation, and "research" as the driver, tightly integrating universities, enterprises, and research institutes. For universities, collaboration enables complementary advantages, aligning university research closely with market demand and promoting IP transformation. The state has consistently advocated strengthening industry-university-research collaboration to pool innovation resources and promote industrial upgrading. Under state policy guidance, universities have actively sought cooperation with relevant institutions, but results have been unsatisfactory. Key issues include: few original, innovative, core achievements; serious patent expiration and short valid patent maintenance periods; increasing PCT patent applications but lack of core patents to break international market barriers; and weak market orientation of research achievements that cannot connect with market demand, resulting in low transformation rates. A major reason is the lack of a stable information distribution center in multi-party collaboration, leading to information disconnection, lag, and asymmetry.

As literature resource centers and information service departments, libraries serve a wide range of users, facing researchers and university functional departments internally and enterprises and research institutes externally, serving as an important platform connecting internal and external stakeholders. The key problem of low university IP transformation rates is disconnection from market demand. By providing IP information services, libraries can establish multi-party interconnectivity channels, effectively integrating the entire industry-university-research chain and promoting multi-institution collaborative innovation. For university researchers, IP information services are not stage-specific in the research process but run through the entire research lifecycle. Particularly before project initiation, research direction directly determines value. During topic selection, IP information services can identify research hotspots, gaps, potential collaborators and competitors, and understand industry dynamics and enterprise needs, enabling targeted research and IP that truly serves society.

3.6 Effectively Utilize Big Data and Artificial Intelligence Technologies to Precisely Meet User Needs

With information technology development, user needs have become complex and diverse due to differences in educational background, knowledge structure, and research interests. The arrival of the big data era has brought explosive data growth and fundamental changes in data utilization, raising expectations for library information services. Universities are growth points and radiation sources for IP. In addition to their own output, they invest substantial funds annually to

purchase domestic and foreign resources. How to precisely meet user needs and transform university IP information resources into usable information supporting technological innovation is a challenging task for university libraries. When providing IP information services, libraries should focus not only on simple information collection and organization but also on deep data mining, organization, and application. Applying data mining technologies such as association analysis and genetic algorithms to user needs analysis can accurately grasp and even predict user needs while improving data resource utilization and providing truly valuable services.

Moreover, the world is entering the fourth industrial revolution led by artificial intelligence, which focuses on data and aims for human-machine symbiosis. AI is closely related to libraries, and leveraging professional advantages to participate in and contribute to AI development is an important issue requiring library attention. Currently, some AI technologies and tools are gradually maturing for intelligent analysis applications, offering more possibilities for service precision and intelligence. AI application can not only maximize libraries' function in supporting research innovation but also help complete work that previously could only be done manually or even remained unfinished. IP information services focus on IP information resource utilization. Rapid intelligent processing of resources can ensure service timeliness and relevance, upgrading library information services while precisely meeting increasingly complex user demands.

Intellectual property is an important indicator for measuring research level and innovation capacity. Among the three major national science and technology awards, both the National Technology Invention Award and National Science and Technology Progress Award, except for the National Natural Science Award, use IP as important supporting material, demonstrating IP's value. To promote university IP information services, reforming the research evaluation system must be the key orientation, increasing IP's weight in evaluation to truly raise IP work status. IP information resources are the foundation of services, and building fully functional resource platforms is essential for developing in-depth services. A standardized service system is the lever for regulating industry development and improving service levels, requiring urgent formulation of norms and policies at the national level. Talent is the main body of services, and talent quality directly affects service outcomes. More high-quality IP and IP information service professionals must be cultivated through quality education and professional training. Integrating the entire industry-university-research chain through IP information services can assist IP management and operation, achieving a whole greater than the sum of its parts. Strengthening the application of mature big data and AI technologies can improve service automation and intelligence levels, upgrading library information services. As a key development area in the IP service industry, only by fully stimulating university IP information services' effectiveness can university resources be transformed into high-quality innovation outputs, thereby supporting university and national technological innovation development.

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Abstract: [Purpose/significance] Intellectual property is an important embodiment of economic, technological and cultural strength, and has become a strategic resource that countries compete for. Against the background of building an IP powerhouse, it is urgent to improve the ability and level of university IP information services to support university technological innovation and "Double First-Class" construction. [Method/process] Through analyzing the current situation of university IP information services, this paper summarizes the problems faced in developing these services and proposes solutions. [Result/conclusion] To solve the dilemmas facing university IP information services, this paper suggests changing research evaluation orientation, strengthening IP information resource construction, building an IP information service standard system, intensifying talent cultivation, linking up the entire industry-university-research chain, and effectively utilizing big data and AI technology.

Keywords: intellectual property; information service; information resources

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