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Research on the Framework System and Cultivation Path of Digital Literacy for Lawyers

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Abstract: The recent release of Deepseek has sparked a new round of discussions about changes in the legal profession. Based on the background of digital transformation, this paper takes the digital literacy of lawyers as the research object. By summarizing the existing research results and combining the current development status of the industry, it initially constructs the framework of lawyers' digital literacy, analyzes the challenges that lawyers may face in the process of improving their digital literacy, and proposes countermeasures for improving lawyers' digital literacy. The aim is to provide path references and methodological guidance for the industry's transformation and development, as well as for the improvement of digital literacy by the majority of lawyers.

1. Introduction

In February, DeepSeek, a large AI model developed by China 's Deepseek company, went viral as soon as it was released, sparking a new round of widespread discussions on the development of artificial intelligence. Unlike ChatGPT, which has high requirements for hardware such as graphics cards, DeepSeek has significantly lowered the threshold for using large model technology with its lightweight architecture design and fully open-source operation model. This feature not only makes the deployment and operation of large models more efficient and convenient, but also provides more opportunities for small and medium-sized enterprises and individual developers to participate in AI innovation, further promoting the popularization and accessibility of AI technology.

After that, the topic of whether DeepSeek could replace lawyers once made it to Bilibili's trending list. This is not a new question, nor is it just one that the legal profession has to deal with; it sparked widespread discussion among scholars as early as the release of ChatGPT. In recent years, research and development of legal artificial Intelligence have been in full swing both at home and abroad, such as IBM's ROSS Intelligence, which claims to be the "world's first artificial intelligence lawyer" and can replace 70% of the legal research work of American lawyers with an accuracy rate of up to 70% [1]. The artificial https://fanyi.youdao.com/downloadintelligence system developed by the University of London and the University of Sheffield can predict judicial decisions with an accuracy rate of 79 percent. In China, there are also specialized legal platforms such as Wusong and Falifang, as well as Bi Wenqiang [2], China's first digital AI lawyer, launched by Beijing Shengting Law Firm in collaboration with Deepbrain AI.

In the face of the surging artificial intelligence, the industry's view is relatively positive: Liu Xi [3]

eci and others believe that legal artificial intelligence can empower lawyers' practice, help lawyers break through cognitive limitations, break traditional growth models, distribute legal service resources evenly and increase international participation. Gao Xueqian [4] et al. argue that the development of artificial intelligence is still in its infancy and is a weak artificial intelligence with uncertainties and limitations. The development and wide application of artificial intelligence have become an unstoppable trend of The Times, but artificial intelligence can never replace human intelligence. Wang Jinghu [5] analyzed the career development of lawyers in the era of artificial intelligence from the perspective of developing new quality productivity, arguing that while new technologies are impacting traditional industries, they will also give rise to new occupations. According to Marx's theory of division of labor, artificial intelligence is used to liberate lawyers from basic and repetitive work. It can not only solve the problem of AI "replacing" lawyers, but also improve the quality and quantity of lawyers' work through reasonable redivision of labor. But it cannot be denied that AI is bound to bring about major changes in the legal profession. Therefore, improving the digital literacy and skills of industry personnel is the inevitable way to adapt to the trend of The Times and promote the development of the industry. It is an important challenge that every lawyer needs to face. This article aims to explore a scientific path for the transformation and development of lawyers by conducting an in-depth analysis of the connotation, composition dimensions and improvement strategies of digital literacy, and to initially construct a framework system of digital literacy for legal professionals in the new era.

2. Review of Digital Literacy research

2.1 The concept of digital literacy

The term "digital literacy" was first coined in 1994 by Israeli scholar Eshet-Alkalai [6]. Later, Paul Gilster first defined digital literacy from an integrated perspective in 1997, arguing that when information is presented through computers, people should have the ability [7] to understand and use the diverse formats of information from different channels, especially through the Internet medium. By 2017, the ITU released its first international systematic declaration on digital literacy, the ITU Declaration on Digital Literacy, which defined digital literacy as the ability to use digital tools and realize their potential. Having digital literacy means being able to maximize the use of digital technologies in an efficient and reasonable way. To meet the information needs of individuals, society and the profession. Research on digital literacy in China dates back to 2006, when Professor Wang Xiaohui [8] first proposed "digital literacy" in his article "Revolution and Conflict - Educational Thoughts on the Informatization of Education". Regarding digital literacy, some scholars believe that it can be divided into narrow and broad senses. For instance, Wu Xiaolong et al. think that the narrow sense of digital literacy refers to the ability and skills of information acquisition, screening, processing and application; In a broad sense, digital literacy refers to an individual's way [9] of thinking about "knowledge, skills, attitudes, ethics," etc. With the development of The Times, the connotation of digital literacy is constantly expanding and extending. At present, major breakthroughs in intelligent technologies such as big data and artificial intelligence have driven profound changes in industries. The integration of technology and industry has also put forward higher requirements for individual digital capabilities - from the mastery of skills in a single field to the comprehensive ability of cross-field collaboration, data integration and the application of intelligent tools, which has also endowed digital literacy with new connotations of The Times.

2.2 Digital Literacy Framework

More mature research on digital literacy frameworks has focused on groups such as teachers,

students, and library and archive personnel, while research on lawyers' digital literacy is relatively scarce. Learning from others' experiences can improve our skills. Reviewing existing research results is of great reference value for building a framework system for lawyers' digital literacy. Domestic and foreign standards are collected as follows(Table 1).

Table 1 Digital literacy framework standards at home and abroad.

Source	Time	Publishing Agency	Constituent Elements
Horizon Report [10]	2016	NMC	General literacy, innovation literacy, interdisciplinary literacy
Global digital literacy framework	2018	UNESCO	Digital security, problem-solving, career-related competencies, equipment and software operation, information and data literacy, communication and collaboration, digital content creation
DigComp2.2 [11]	2022	EU	Information and data literacy, communication and collaboration, digital content creation, security, problem-solving
Digital literacy of teachers [12]	2022	Ministry of Education of the People's Republic of China	Digital awareness, digital technology knowledge and

Overall, digital literacy represents not only the ability to learn and use digital technology tools, but also the awareness of using digital technology resources for thinking, practice and exploration. It places more emphasis on voluntarily abiding by the moral norms, laws and regulations related to digital activities, as well as the sense of responsibility for maintaining the security of the digital society. Its connotation is highly consistent with the social responsibility of lawyers. As participants and an important driving force in building a law-based China, lawyers shoulder the important duties of disseminating legal knowledge, providing legal aid, and maintaining social fairness and stability. The plan for building the rule of law in China clearly states that "modern technologies such as big data, cloud computing and artificial intelligence should be fully utilized to build a 'smart rule of law' and promote the digitalization, networking and intelligence of building the rule of law in China", which requires lawyers to accelerate the improvement of their personal digital literacy, whether for better fulfilling their mission or realizing their personal value.

3. Construction of a framework for digital literacy of legal professionals

At present, only the teaching profession has officially released specific industry standards for digital literacy. Other standards such as those for civil servants, farmers, and researchers are mostly designed by scholars referring to research at home and abroad. Based on the review of existing standards and literature, it was found that both teachers and lawyers play the dual roles of "knowledge disseminators" and "public service providers" in digital transformation, and there is a strong convergence between the two in terms of social ethical responsibility and professional development needs. This study refers to the digital literacy of teachers released by the Ministry of Education. Combining the connotation of digital literacy, relevant documents such as the construction plan of the Rule of law in China, and the characteristics of the industry itself, the basic content of the digital literacy framework for lawyers in China is initially summarized, including 4 first-level dimensions and 11 second-level dimensions, as shown in Figure 1 below.

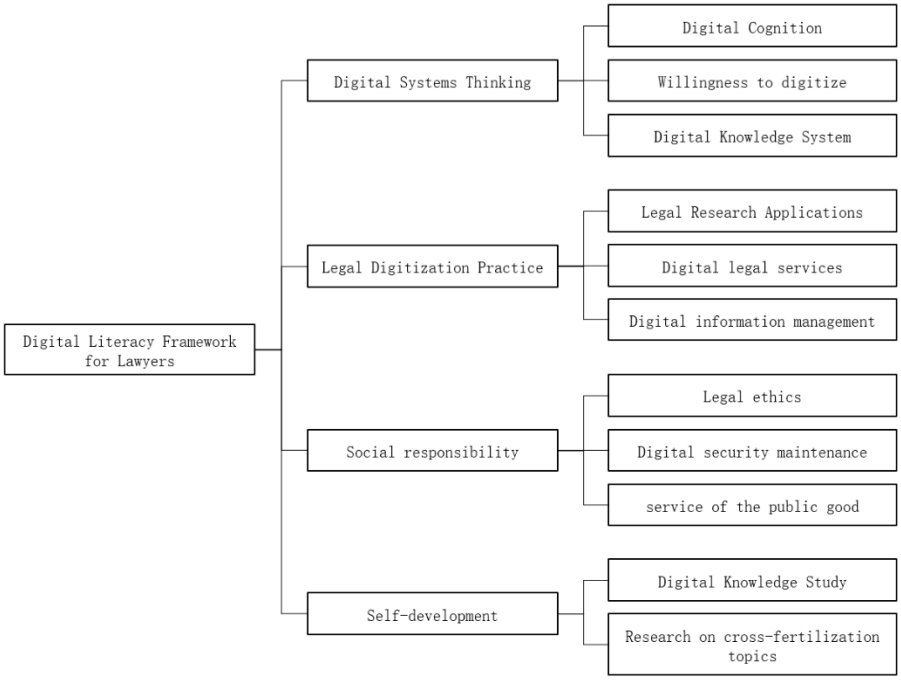

Figure 1 Digital literacy Framework for lawyers.

3.1 Digital System

Thinking Dimension Digital system thinking is the foundation of lawyers' digital literacy, which includes three indicators: digital cognition, digital willingness, and digital knowledge system. It refers to lawyers' systematic understanding of the essential laws of digitalization, their willingness to actively explore the application of technology to empower legal work scenarios, and their composite academic literacy that integrates legal thinking with digital logic. This dimension is the basis for lawyers to carry out digital legal services such as technology adaptation, legal compliance, and value creation.

3.2 Dimension of Legal Digital Practice

It includes three indicators: legal research application, digital legal services, and digital information management. It refers to the core ability of lawyers to apply digital technology to innovate working methods and optimize service efficiency in the process of providing legal services, emphasizing the deep coupling of legal value and digital logic through tool innovation, process reengineering, and scenario integration. The essence of this is to use digital technology as a lever to drive the precision, efficiency and accessibility of legal services, while enhancing service efficiency and client experience, and ensuring that the application of technology complies with legal ethics and industry norms.

3.3 Dimension of Social responsibility

It includes three indicators: legal and ethical norms, digital security maintenance, and public welfare services. It means that lawyers should build a responsibility system with legal and ethical norms as the bottom line, digital security as the red line, and public welfare contributions as the extension in the process of digital transformation, and supervise and implement throughout the entire chain of legal technology research and development, data asset operation, and intelligent tool use. It

represents the legal community's commitment to upholding fairness and justice in the digital age, bridging the gap in the application of technology, and safeguarding public interests.

3.4 Dimension of Self-development

It includes two indicators: digital knowledge research and cross-integration research. It refers to the ability of lawyers to utilize digital technology resources to promote their own development in order to improve their own capabilities, professional levels, and digital literacy, which is a guarantee for the sustainable improvement of lawyers' digital literacy.

4. Challenges in cultivating digital literacy among legal professionals

The improvement of lawyers' digital literacy is related to the goal of building the rule of law in China. However, in reality, due to the influence of various factors such as region, planning and standards, the cultivation and improvement of lawyers' digital literacy still face many challenges.

4.1 Uneven distribution of resources makes it difficult to synchronize the overall improvement

According to the data on software and information technology services in various provinces and cities released by the Ministry of Industry and Information Technology in 2023, Shandong has the largest number of software enterprises with 7,023, while Qinghai has the smallest number with 7, a difference of more than 1,000 times. However, although Shandong has more than five times the number of software enterprises in Shanghai, its total profit is only 73% of that of Shanghai. In terms of research and development expenditure, the highest and lowest provinces differ by more than 1,800 times. The number of software enterprises to some extent reflects the distribution of digital resources in our country. With more software enterprises, digital resources are more abundant and more highly digital literacy talents are gathered. Local lawyers have more ways to improve their digital literacy, which will affect the ease with which lawyers in various regions can access digital resources and improve their digital literacy. Some scholars have studied and suggested that small law firms will face greater challenges in this wave of artificial intelligence. This is not only because large law firms in first-tier cities have more resources to invest in digital transformation, but also because of the "algorithmic black box" of AI itself - large law firms can gain a head start by collaborating with software companies to develop legal AI, while algorithmic discrimination may put small law firms at a disadvantage when competing for business. It could even lead to pricing power in digital legal services being controlled by one or a few large companies. Intelligent technologies such as driverless cars will first hit the bottom industries with high repetition and substitutability. While large law firms can reduce the impact of industrial upgrading by expanding legal services in highend, international and emerging fields, for the pyramid-shaped industry ecosystem of the legal profession, small firms and practitioners at the bottom of the pyramid will struggle.

4.2 The education system is not perfect and there is a lack of professional foundation

Receiving education is the most important way to develop a person's ability and quality. However, at the current stage of educational institutions, the curriculum system for cultivating digital literacy in the law major is not yet complete. The prominent problems are manifested as the insufficient integration of law with related disciplines. Some institutions only regard the law interdisciplinary subject as a simple combination of law and other majors, and do not have a thorough [13] understanding of the connotation of the law interdisciplinary subject. Interdisciplinary subjects such as artificial intelligence, big data, and computer science are often chosen as elective courses by

students based on their interests and needs. Without the support of relevant basic knowledge systems and hard assessment standards, it is impossible to stimulate students' interest in interdisciplinary learning and research or enable them to master the course knowledge, which affects the generation of students' digital literacy. During the lifelong learning stage, the training courses of various educational institutions in the market are diverse and of varying quality, and due to the fragmented learning characteristics of the digital age, learners will face many problems: First, in the face of a vast amount of fragmented learning resources, due to the lack of relevant professional knowledge, it is difficult to distinguish the quality of resources and screen them, which can easily lead to information overload or absorption of incorrect information. Second, there is no guarantee of time and energy for learning after work. Receiving a large amount of information in a short time may make it difficult to think deeply about problems, and knowledge acquisition is superficial, which is not conducive to deep understanding and mastery. Third, the inability to effectively integrate the vast amount of information obtained into a complete knowledge system may lead to the fact that although a lot of digital knowledge or skills have been mastered, they cannot be effectively combined and used in actual work, and their support for work practice is limited. Fourth, develop a reliance on intelligent tools for quick access to information and problem-solving methods, creating an "instant gratification" mentality that leads to superficial learning. These will cause lawyers to face more difficulties in learning and mastering digital knowledge. For older lawyers, they are in high positions in the local legal profession and have more power resources, but due to factors such as age, knowledge system, work experience and risk resistance, they have a lower acceptance of digitalization and face "digital transformation". They may be unable or unable to respond effectively in a timely manner. Although young lawyers have a stronger ability to learn, they lack the right to speak. Faced with the complex training courses and high learning costs, it is difficult for them to break the framework of their existing knowledge system and improve their digital literacy through their own learning without the support of systematic training.

4.3 The system and mechanism are not sound, and it is difficult to stimulate the willingness to transform

Although the Ministry of Justice has clearly put forward the goal of "smart rule of law" construction in the construction of a law-based China, from planning to implementation, the landing of cutting-edge projects, especially high-tech achievements, is often piloted in some large and medium-sized cities first and then promoted to other regions across the country after they are relatively mature. This lag causes many law firms and their practitioners to be unable to intuitively sense the urgency of digital transformation and the huge changes it brings to the industry, resulting in the inability to make timely adjustments in strategic planning and design, institutional and mechanism reform, personnel mobilization and training, etc., and eventually falling behind step by step, lacking resource input, policy inclination, assessment and supervision, It fails to effectively stimulate the enthusiasm of lawyers to improve their digital literacy, and the lack of digital talents will also have a reverse effect on the digital transformation process of law firms. At the same time, there is a lack of academic research on lawyers' digital literacy. There are no unified standards and norms on digital literacy within the industry. Although some law firms have begun to work on digital transformation, they have different focuses and resource inputs and have not formed a synergy. This free-developing model will offer limited assistance to the digital transformation and development of the entire industry and the improvement of personnel digital literacy. In addition, the hierarchical management structure of the law firm also hinders its digital transformation to some extent. If the upper-level managers fail to keep abreast of the changes in the industry in a timely manner, it will be difficult for the lower-level demands to be passed on to the upper-level ones, making it difficult to

make quick adjustments and responses in the face of industry changes. It will also be impossible to effectively improve and evaluate the digital literacy of the lawyers under its jurisdiction.

5. Strategies for cultivating and enhancing the digital literacy of legal professionals

5.1 Develop industry standards for digital literacy of lawyers

The "Teacher Digital Literacy" standard issued by the Ministry of Education in 2022 has a positive promoting effect on the improvement and evaluation of teachers' digital literacy, and also provides a reference for the digital transformation work of other industries. At present, there is no unified standard for lawyers' digital literacy. It is necessary to organize the competent authorities, legal experts and front-line lawyers and other industry personnel to work together to study and introduce relevant standards as soon as possible to regulate the connotation, dimensions and standards of lawyers' digital literacy, guide law firms and front-line lawyers to carry out digital transformation work in an orderly manner, and build a consensus throughout the industry to respect and improve digital literacy. And it also need to fully consider regional and industry characteristics and formulate targeted and practical grading and classification standards to ensure that lawyers have the ability to carry out the relevant work and transform the improvement of digital literacy into the ability to serve the construction of the rule of law in China. It is necessary to revise and improve the standards and relevant policies in a timely manner in line with technological development to achieve sustainable improvement of lawyers' digital literacy.

5.2 Improve the system for fostering and guaranteeing lawyers' digital literacy

We need to enhance policy support for law firms and lawyers to improve their digital literacy, incorporate the relevant content of digital literacy assessment into the implementation measures for promoting the high-quality development of the legal profession in various regions, set up policy benchmarks, guide the entire industry to engage in digital transformation, and stimulate the enthusiasm of lawyers to voluntarily improve their digital literacy. It is necessary to standardize the digital literacy training course system in line with the standards for lawyers' digital literacy, organize professional institutions to regularly produce and update high-quality online courses for lawyers to learn, and also pay attention to the combination of theoretical and practical teaching, use intelligent technology to set up online simulation learning platforms or tools, and make lawyers' digital skills training more solid and refined. It is necessary to establish an organizational guarantee mechanism for coordination and cooperation among departments and between the government and the industry, and to promote the cultivation of lawyers' digital literacy on a regular basis. Through systems such as regular consultations and joint evaluations, problems in the process of improving lawyers' digital literacy should be addressed, and all entities should be encouraged to actively participate in this work.

5.3 Strengthen the norms for lawyers' digital ethics construction

Legal liability and ethical issues are important challenges that legal artificial intelligence is currently facing. Whether it is algorithmic black boxes or implicit discrimination, it can undermine social fairness and justice. Relevant state departments should study and issue normative guidance documents on digital ethics and digital morality to clarify responsible entities and regulate industry behavior. As an important participant in building a law-based China, lawyers themselves have a social responsibility to uphold fairness and justice. The development of legal artificial intelligence cannot do without the participation of lawyers and other relevant professionals in the field. In the process of their digital literacy training, we should strengthen digital ethics education, cultivate high-quality

interdisciplinary professionals who understand technology and are responsible, and ensure that they can promote the core socialist values and consciously maintain social digital security when participating in relevant activities. It is necessary to establish assessment and supervision mechanisms related to digital ethics, regularly assess and supervise the behavior of practitioners, and foster a good industry atmosphere of abiding by rules and regulations and fulfilling social responsibilities.

6. Conclusion

In this era of rapid digital technology development, the need for lawyers' digital transformation is increasingly urgent. This is not only related to their personal survival and development, but also an important part of building a law-based China. Based on the existing research on digital literacy frameworks, this article initially summarizes and proposes a framework for lawyers' digital literacy, analyzes the obstacles that restrict lawyers' digital transformation, and puts forward some countermeasures, hoping to provide references for the development of the legal profession and the construction of the rule of law in China. With the continuous breakthroughs in intelligent technologies, new connotations have been given to digital literacy. In future research related to this, more attention needs to be paid to the transformation from "digital literacy" to "digital intelligence literacy".

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