

Analyzing the Impact of Online Litigation on the Traditional Trial Model in the Framework of Civil Procedure Law from a Digital Perspective

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Abstract With the development of information technology and the gradual popularization of the online litigation mode, the digital trial mode has had an impact on the traditional trial mode under the framework of the civil procedure law, which needs to be analyzed in depth to determine its impact and the effectiveness of its application. This study analyzes the impact of online litigation on the traditional trial mode under the framework of civil procedure law from a digital perspective. Through a combination of literature analysis, case study and questionnaire survey, it systematically examines the key problems of the trial mode under the framework of civil procedure law, explores the practical steps and application paths of online litigation, and empirically analyzes the effectiveness of the online litigation system in judicial services. The study found that after the implementation of the online litigation system in L courts, the success rate of paper service increased from 71.27% in 2017 to 90.25% in 2024, and the utilization rate of summary procedures increased from 75.19% to 92.07%. More than 208,670 times of various litigation materials were served through the online litigation system, saving more than 1.6 million yuan in service costs each year. The questionnaire survey showed that the user experience satisfaction ratings of the online litigation system by case judges and parties reached 4.61 and 4.70 respectively, and the study shows that the online litigation system has effectively enhanced judicial efficiency, saved judicial resources and improved user experience through digital transformation, but there is still room for improvement in terms of system stability and interface user-friendliness, etc. This study is helpful for promoting the digital transformation of civil litigation system. This study has important reference value for promoting the digital transformation of civil litigation and improving the online litigation mechanism.

Index Terms online litigation, civil procedure law, traditional trial mode, digital transformation, judicial efficiency, user experience

I. Introduction

With the development of Internet technology, online litigation has also gradually developed, from small-scale practice in small areas to the current nationwide promotion, online litigation system is constantly improving [1]-[3]. Online litigation is through the mobile unified portal to provide filing, payment, court, service, preservation, appraisal and other “one network” litigation services, online services to achieve full coverage of the four levels of courts, the establishment of online complaint and petition platform covering the four levels of courts [4]-[7]. The biggest feature of online litigation is convenience and speed [8]. The goal of litigation is to resolve disputes, while online litigation is to deal with disputes more quickly and conveniently [9], [10]. Online filing, online service, online trial and other litigation services are both fast and convenient, and can meet the diverse judicial needs of the general public, provide more high-quality, convenient and time-saving judicial services, and also save the cost of costs and expenses such as offline lodging, taxi, meals, etc. [11]-[14].

As a new type of litigation, online litigation to a certain extent can overcome the shortcomings of the traditional litigation, from the litigation structure, the parties involved in the litigation mode and procedural openness and other aspects, online litigation will have a great impact on the traditional trial procedures, trial methods and evidence rules, but also for the current civil legislation provides many opportunities for innovation and breakthrough [15]-[18]. But at the same time, online litigation also inevitably bring challenges to the traditional rules of litigation, mainly in the non-meeting trial on the challenge of the principle of direct speech, online litigation on the contradiction between the traditional rules of evidence, as well as remote participation in the trial of the mode of the traditional system of territorial jurisdiction also bring challenges [19]-[22]. Therefore, in order to cope with the impact of online litigation on the traditional trial mode, the traditional litigation rules have been reshaped to give new connotation to the

principle of direct speech in the new era, to make new adjustments to the traditional rules of evidence, and to explore the jurisdictional system separated from the territory, with a view to promoting the development of online litigation [23]-[26].

With the rapid development of information technology, the digital transformation of the judicial field has become an important trend in global judicial reform. Online litigation, as an important manifestation of judicial digitization, realizes online and intelligent litigation procedures through Internet technology, breaking through the time and space limitations of traditional litigation and providing more convenient and efficient litigation services for the parties. In recent years, China has actively promoted the construction of intelligent courts, and the online litigation system, as its core component, has been operated on a pilot basis in a number of courts, and preliminary results have been achieved. However, the promotion of online litigation mode has also brought unprecedented impact and challenge to the traditional trial mode under the framework of civil procedure law. Traditional civil litigation is built on the basis of face-to-face verbal hearings, emphasizing the direct contact between the judge and the parties, while online litigation breaks this pattern, introduces a virtual courtroom space, and changes the way evidence is presented, questioned, and formed by the judge's heart. At the same time, a series of problems faced in traditional civil litigation, such as insufficient protection of the rights and interests of victims and inadequate supporting systems for the selection of trial modes, have also taken on new characteristics in the context of digitization. How to make full use of digital technology to enhance judicial efficiency under the premise of safeguarding judicial justice has become an important issue to be solved in the current civil litigation field. Existing research mainly focuses on the technical realization of online litigation and the design of procedural rules, less research on the conflict and integration of its traditional trial mode, and a lack of systematic empirical analysis of the specific effectiveness of online litigation in practice. Therefore, an in-depth analysis of the impact of online litigation on the traditional trial mode from the perspective of digitalization is of great theoretical and practical significance for improving China's civil litigation system and promoting judicial modernization.

Based on this, this study will be carried out in the following aspects: firstly, sorting out the key problems of the traditional trial mode under the framework of civil litigation law, including the insufficient protection of victims' civil rights and interests and the incomplete supporting system for the selection of the trial mode; secondly, exploring the practical steps of online civil litigation, including the rules of pre-trial procedure and the rules of court trial procedure; and thirdly, analyzing the path of application of the digital mode of litigation to guide the law enforcement, including Thirdly, analyzing the application path of the litigation digital model to guide law enforcement, including the pre-litigation procedure as the implementation stage, the "V" model as the basic method, and the legal supervision model as the effective carrier; finally, through the empirical research on the online litigation system of the L court, comprehensively evaluating the effectiveness of the online litigation system in the judicial service from the perspective of centralization of the service function, saving of the judicial resources, enhancement of the efficiency of the courtroom, and the satisfaction of the users. Through the above research, it aims to deeply reveal the mechanism of the impact of online litigation on the traditional trial mode, and provide theoretical support and practical guidance for promoting the digital transformation of civil litigation.

II. Key problems with the trial model under the Code of Civil Procedure

II. A. Existing Trial Models Neglecting the Protection of Civil Rights and Interests of Victims

II. A. 1) Lack of procedural options for victims

Under the dominant model of "criminal before civil" [27], the precedence of criminal proceedings will inevitably have a negative impact on the protection of victims' civil rights and interests. If the court directly decides to apply the "criminal before civil" trial mode, the victim would have hoped to resolve the dispute with a civil compensation lawsuit with a lesser degree of punishment. However, when the criminal process intervenes, its dominant position has to give way to that of the State authorities, and "the victim's interest in obtaining civil remedies is simply submerged in the State's interest in punishing the crime". This has resulted in the loss of the right to procedural choice in the event that they lose the best time and efficiency benefits of civil rights and interests protection and are still unable to participate actively, directly and fully in the criminal proceedings throughout the process to express their claims, and have difficulty in directly advocating for the preservation of their property and obtaining the right to negotiate compensation in direct contact with the suspects.

II. A. 2) Criminal recovery of restitution as a deterrent to civil action

The criminal recovery and restitution of damages is a deterrent to civil litigation in the sense that after criminal proceedings have been initiated, a civil case that has already been accepted is dismissed or suspended. There are three main reasons for this obstruction:

First, by the “criminal over civil” traditional concept of influence, most of the view that criminal recovery procedures can fully compensate for the losses suffered by the victim, so in order to avoid the irrational allocation of judicial resources, for the same subject for the same facts of the civil lawsuit is no longer repeated admissibility.

Secondly, due to the inconsistency in the standard of understanding of the “same fact” by criminal and civil judges, there is a misinterpretation of “different legal facts” as “the same fact”, thus blocking civil litigation.

Third, the implementation of the failure can still continue to recover. For the subject of criminal liability and civil liability are the same person, if the full amount can not be recovered or reimbursement, the defendant's ability to pay compensation has been clearly insufficient, there is no need to start civil litigation. Because even if the results of the civil judgment into the implementation stage will also fall into the “implementation can not” deadlock. If we can wait until the future implementation of the department again found the defendant's other illegal income or has been restored to the ability to compensate, and then resume the recovery or ordered to pay compensation can also achieve the goal of relief. At this point, in order to avoid the victim receiving repeated compensation, the victim's separate lawsuit is inadmissible.

II. B. Inadequate supporting systems for the selection of existing trial models

II. B. 1) Difficulties in preserving property involved in cases

In the course of dealing with criminal-civilian cross-border cases, due to the long litigation period, the large number of people involved, the complexity of the flow of funds, and the difficulty of keeping property in safekeeping, failure to take timely preservation measures is likely to result in the transfer of the property involved in the case or the loss of the relevant evidence, which will make it difficult for the victim to recover his or her losses. The main reasons why it is difficult to recover the property involved in the case are:

First, the property involved in the case is easy to be transferred, squandered, resulting in the victim's loss is difficult to make up.

Secondly, the legal relationship involved in the case is complex, and it is difficult to identify the flow of funds involved in the case.

Third, the property involved in the custody of the difficulty.

It is on the basis of these problems that it is difficult to determine the amount of loss and ownership of the property involved.

II. B. 2) Inadequate national compensation system for criminal victims

Under the “criminal before civil” model, it is less likely that the victim's losses can be fully compensated through criminal restitution and recovery. The reason for this is that the criminal defendant in such cases has already illegally transferred or squandered the funds, and his or her financial chain is broken, so his or her ability to make compensation is already weaker when criminal proceedings are initiated. Since they are unable to compensate for their losses, it is even more difficult to protect the civil rights and interests of the victims, which may even affect the normal life of the victims and their relatives. In the long run, if the victims' interests are not met, they will become dissatisfied with the judicial authorities.

III. Practical steps in online civil proceedings

III. A. Pre-trial procedural rules

III. A. 1) Online case filing

In contrast, the traditional offline case filing process consists of several steps. In the first step, the parties must personally go to the court's litigation service center and wait in line. In the second step, the party submits the litigation materials, and the staff at the filing window is responsible for examining whether these materials meet the conditions for filing a case. In the third step, the party pays the litigation fee and a receipt is issued by the court staff. Upon completion of the above steps, the court will generate and provide a receipt that the case has been accepted.

The emergence of online filing as a new type of case filing has greatly optimized this process. Parties can submit all necessary litigation materials remotely via the Internet without having to visit the court in person, saving time and effort. The court examines the materials efficiently through the electronic system, which not only simplifies the procedure but also speeds up the trial. The implementation of online filing not only enhances the efficiency of litigation, but also improves the convenience of the parties involved in litigation, helping to realize more efficient and fairer judicial services.

III. A. 2) Electronic service

As a typical application of the integration of justice and modern information technology, e-service [28] not only effectively solves the challenges faced by traditional service methods, such as increased difficulty in service and rising costs, but also significantly improves judicial efficiency and the quality of case processing. Through the use

of modern communication tools such as electronic mail and instant messaging software, e-service of process realizes the speed and precision of legal document service and ensures that the litigation rights of the parties are effectively safeguarded. At the same time, the fusion of electronic service and blockchain technology has further strengthened the security and reliability of the service process, marking that the development of the electronic service system has reached a new height, providing important technical support and methodological innovation for judicial practice.

III. B. Rules of procedure for court hearings

III. B. 1) Online courtroom model

The promotion of online court hearings [29] not only reflects the positive adaptation of the judicial system to information technology, but also highlights the unremitting efforts of the legal system in the pursuit of procedural values. Online court hearings provide a more convenient participation channel, enabling more parties to participate in the judicial process and helping to realize the goal of approaching justice. In addition, by optimizing the court's trial management, online trial also significantly improves the efficiency of case handling, which is of great significance in easing the pressure on the court's cases and improving the credibility of the judiciary. In practice, pilot courts around the world have actively explored the implementation of online court hearings according to their own conditions, introducing differentiated rules and models, which marks the advancement of the judicial system to a higher level of digital justice. Through these practices and innovations, China has made remarkable progress in the field of online litigation, which not only optimizes court trial management and enhances litigation efficiency, but also provides the general public with more convenient and efficient judicial services.

III. B. 2) Asynchronous trial mode

The implementation of the asynchronous trial model has not only given the parties a more flexible means of participation, but has also brought new requirements and opportunities to the court's trial work. The procedure divides litigation into three stages: pre-litigation consultation, pre-trial preparation and centralized processing, effectively integrating online elements into the traditional dispute resolution mechanism. However, the asynchronous trial mode may also have an impact on the traditional principle of direct speech, which may affect the determination of facts and the examination of evidence due to the lack of real-time face-to-face communication. This is potentially contradictory to the principle of "trial-centeredness" emphasized in the current judicial reform, and requires careful consideration and balancing by legal practitioners.

In legal practice, the promotion and application of asynchronous trial mode needs to take into account the principles of efficiency and justice. On the one hand, the model has significant advantages in improving the efficiency and convenience of litigation, especially when dealing with cases involving large differences in time zones or foreign countries. On the other hand, legal practitioners need to conduct in-depth research and carefully consider the possible impact of the asynchronous trial mode, to ensure that, while improving efficiency, it does not jeopardize judicial justice and the correct determination of the facts of the case. It is only through continuous exploration and improvement that we can ensure that the asynchronous trial mode can play its due role in judicial practice, and jointly promote the modernization of the judicial system.

IV. Paths for the application of digital models of litigation to guide law enforcement

IV. A. Pre-litigation proceedings as the implementation phase

The specific application of the digital guidance model in the pre-litigation procedure is:

First, the procuratorial authorities through big data in the acquisition of public interest damage case clues, after comprehensive research and investigation and verification, administrative public interest litigation cases filed for investigation and notified the corresponding administrative organs in writing.

Secondly, the procuratorial authorities in the decision to file a case can be on the facts of public interest damage and rectification program with the relevant administrative organs for consultation, and to hire appraisal institutions and relevant experts, better on the facts and legal issues for comprehensive sorting and analysis.

Thirdly, there is a two-month rectification period after the procuratorial organ has issued a procuratorial recommendation to the administrative organ, during which the procuratorial organ follows up on the implementation of the rectification process of the relevant administrative organ in a timely manner, listens to the rectification plan of the administrative organ, and provides targeted legal advice for the rectification measures of the administrative organ.

Fourthly, if, after receiving the procuratorial recommendation, the administrative organ is negligent in fulfilling its duties or fails to carry out its duties in full, the procuratorial organ will file a lawsuit with the court, further urging the administrative organ to carry out its duties by means of a judgment.

IV. B. The “V” model as a basic approach

The technical approach of the “V” model is an important thinking and working mode of the digital guidance model, which has four core points:

First, top-down analysis. That is, to determine the multi-cross synergistic system, build the legal supervision model.

Second, bottom-up integration. Integrate the new system after reorganization, and finally validate the key tasks of the multi-span collaborative system.

Third, using big data as the main axis, summarizing and integrating different levels and units of the system to form an organic whole, and identifying quantitative system components through the collision of related data within the system.

Fourth, gather wisdom and research. The formation of a special group of personnel from various related fields, the use of multidisciplinary knowledge, in the “legal thinking + big data thinking” led by the system analysis and deduction, to find the best path to solve the problem.

The Command Center has set up three working groups, namely, the Research and Judgment Comprehensive Group, the Supervision and Guidance Group, and the Data Protection Group, to form a digital case management model with the goals of “integrated data management, accurate and scientific research and judgment, intelligent model formation, and effective clue diversion”.

IV. C. The legal monitoring model as an effective vehicle

The legal supervision model is essentially a digital logic and digital mode of operation, and is a new type of supervision mode formed under the coherence of “legal thinking + big data thinking”. The traditional supervision model is based on case-by-case handling, with reverse and causality as the method of thinking, limited by manpower, objects, capabilities and other factors, resulting in low efficiency, time-consuming and laborious investigation and evidence collection, and also failing to find clues to the problem. The effect of supervision is limited to individual cases, and it is impossible to use individual cases as the fulcrum to pry the whole field of legal supervision, and then promote the systematic governance of social problems. The legal supervision model applies the “V” model technology method, centers on the sharing and use of big data, and solves a core problem in the scope of administrative public interest litigation cases by presetting key task points.

V. Analysis of the effectiveness of the online litigation system in the delivery of justice

The L People's Court was established in 1988, and currently has nine internal organizations, as well as three other people's tribunals in the eastern suburb, western suburb, and Fujiqiao, and a disciplinary supervision department in accordance with the relevant provisions of the central government. The L Court tried out the online litigation system in 2017, and was one of the first batch of units to start piloting the operation of the online litigation system. This section analyzes the operational effectiveness of the online litigation system in the judicial practice of this court, focusing on three aspects: centralization of judicial service functions, resource saving, and court trial efficiency, and surveys the satisfaction of judicial personnel and parties with the effectiveness of online litigation.

V. A. Centralized statistical analysis of service functions

The online litigation system, which runs through all aspects of judicial service, has greatly reduced the time and financial costs of the parties and has been unanimously recognized by the parties and judges. Figure 1 shows the changes in the online filing rate, the success rate of service of documents, the announcement rate, and the utilization rate of summary procedures since the pilot of the L Court Online Court. As can be seen from the figure, the online filing rate of the L Court Online Litigation System has been maintained at 100% since its introduction and implementation in 2017, and the success rate of service of documents has increased from 71.27% in 2017 to 90.25% in 2024. Publication rates have shown a downward trend, with only 51.38% in L courts by 2024. The summary process utilization rate has increased from 75.19% in 2017 to 92.07% in 2024. The implementation of the online litigation system to realize the electronic litigation services from “fragmentation” to “centralization”. Previously, the construction of judicial information technology was to develop whatever was needed, with a fragmented number and a single function. The emergence of online litigation system, the existing trial execution and other judicial services for the full integration, through the judicial internal and external network system, comprehensive real-time two-way interactive information database. From the first trial to the second trial of the case, from the filing to the archiving of the various processes are fully open, for the parties, lawyers, judges to provide one-stop electronic litigation services support.

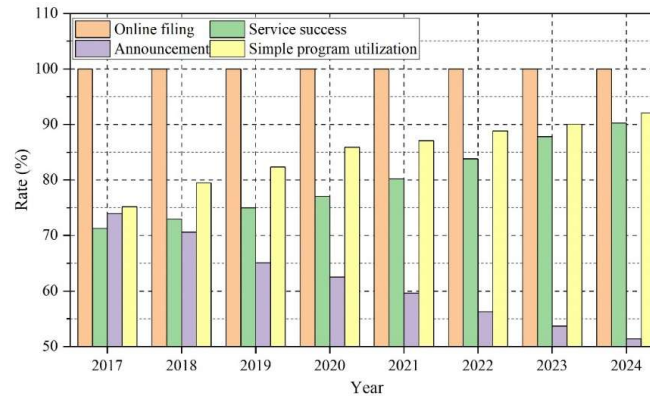


Figure 1: Changes in the rate of online filing and the success rate of service delivery

V. B. Measured cost savings in judicial resources

The online litigation system has pioneered the electronic service of legal documents, with online service of documents as the main mode of service, reducing the traditional methods of service such as postal service and entrusted service, and greatly saving judicial resources and costs. According to the data in the online litigation system of L Court, the statistics obtained the number of times of electronic litigation materials served in L Court from 2017 to 2024 as well as the estimated cost savings are shown in Figure 2. From the figure, it can be seen that as of the end of December 2024, L Court served various litigation materials more than 208,670 times through the online litigation system, and the cost savings of service is estimated to be more than 1.6 million yuan per year. The Online Litigation System promotes a paperless litigation process and minimizes the provision of paper materials by the parties. It is estimated that the average reduction in the number of pages of filed case files is more than 26 pages, and the average reduction in the number of pages of procedural documents sent to the parties is more than 17 pages. The implementation of the online litigation system has promoted a shift from “paper-based” to “paperless” judicial case processing. The full implementation of the online litigation system has facilitated the transformation of court work from paper-based to digital, and the litigation process has been transformed from a single offline to a comprehensive online process. The online litigation system integrates the functions of filing, proof, service, defense, cross-examination, mediation, trial, filing and other aspects of litigation in each case, covering a wide range of areas, so that any judicial process can be realized online through the online litigation system, which reduces the generation of physical materials and saves costs.

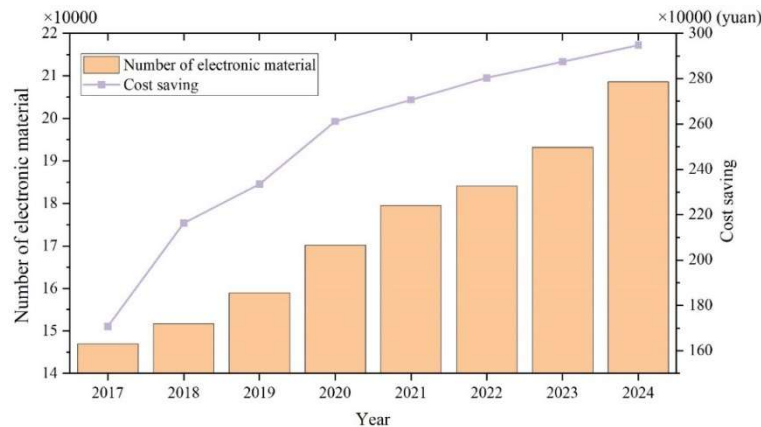


Figure 2: The number of electronic litigation materials and the cost savings estimate

V. C. Assessment of the effectiveness of courtroom efficiency improvements

A questionnaire survey was used to analyze the effect of improving the efficiency of court hearings based on the online litigation system in L court. Two subjects were chosen to be tested, namely the case-handling judges and the parties who went to the court for civil litigation. A total of 50 case-handling judges were selected. Among them, 13 are over 50 years old, 25 are between 40 and 50 years old, and 12 are between 30 and 40 years old. Forty-two had bachelor's degrees and eight had postgraduate degrees or higher. 50 parties (hereinafter referred to as parties) who went to the court for civil litigation were selected. The cases cover different types of civil lawsuits such as

divorce, private loans, motor vehicle traffic accidents, neighboring disputes, etc. The survey mainly investigates whether the public agrees that the online litigation system is effective in improving the efficiency of court hearings, and the survey indicators are as follows:

- (1) Time efficiency indicators: trial cycle, court time utilization, and adjournment efficiency.
- (2) Procedural Efficiency Indicators: efficiency of pre-trial preparation, standardization of trial process, and efficiency of pronouncing judgment in court.
- (3) Indicators of party experience: convenience of litigation participation.

The survey was analyzed by using Richter's five-level scale, with higher ratings indicating a higher degree of recognition by the investigators. The collected data were categorized according to the test purpose of the questionnaire, and the tendency of the questionnaire topics was used as the basis for judging the results, so as to arrive at the research results. Fifty questionnaires were sent to the case judges and 50 valid questionnaires were returned. Sent to the parties 50 questionnaires, retrieved 50 valid questionnaires. The results of the two sets of questionnaires are now summarized and analyzed.

Table 1 shows the results of the questionnaire survey on the improvement of court hearing efficiency by online litigation system. From the table, it can be seen that with the intervention of the online litigation system, the efficiency of court hearings is unanimously recognized by the judges in charge of the cases as well as the parties to the civil litigation. For the indicators of time efficiency, procedural efficiency and parties' experience, the questionnaire ratings of case-handling judges ranged from 4.19 to 4.64, and the parties' ratings ranged from 4.14 to 4.6. This indicates that the respondents all believe that the online litigation system will bring an impact on the traditional trial mode, improve the transparency of the trial and increase the efficiency of the trial process.

Table 1: The results of the online litigation system on the efficiency of the trial

Dimension	Index	Case judge		Parties	
		Mean	SD	Mean	SD
Time efficiency	Trial period	4.63	1.49	4.49	1.48
	Trial time	4.55	1.42	4.37	1.2
	Efficiency of delay	4.23	1.61	4.6	1.27
Program efficiency	Preparation efficiency	4.19	1.17	4.33	1.62
	Trial procedure specification	4.3	1.22	4.52	1.36
	Sentencing efficiency	4.64	1.62	4.14	1.3
Client experience	The litigation is easy to facilitate	4.52	1.44	4.55	1.24

V. D. Online Litigation Satisfaction Survey

Next, a survey was conducted on the satisfaction with the effectiveness of online litigation in Court L. The survey dimensions include judicial efficiency user experience, technology performance, social benefit, cost-effectiveness, and innovativeness. Through the results of the survey on the satisfaction of online litigation effectiveness, the feasibility of the ease of use and the application of new technologies in the digital transformation of the trial mode is analyzed.

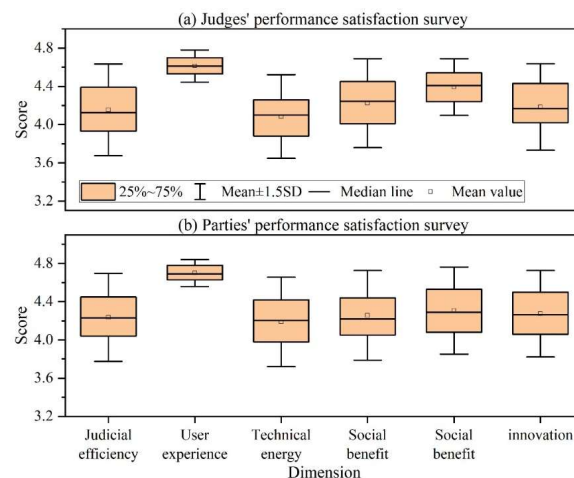


Figure 3: Results of online litigation results satisfaction survey

Figure 3 shows the results of the survey on satisfaction with the effectiveness of online litigation, and Figures (a) and (b) show the satisfaction ratings of case-handling judges as well as parties to online litigation, respectively. The results in the figure show that both case-handling judges and parties gave high ratings to the effectiveness of online litigation. The two groups have the highest average ratings on the user experience dimension, 4.61 and 4.70 respectively, indicating that the online litigation system can improve the efficiency of the litigation process for users and shorten the litigation process through digital process reconstruction. All other dimensions were rated above 4.0, again showing high satisfaction. Overall, although some respondents expressed satisfaction with the overall effectiveness of online litigation, a small percentage of respondents still pointed out deficiencies in system stability and interface friendliness, indicating that there is still room for improvement in the current digital progress.

VI. Conclusion

This study systematically analyzes the impact of online litigation on the traditional trial mode under the framework of civil litigation law from a digital perspective. The study shows that the online litigation system has effectively solved the key problems in the traditional trial mode by changing the form of litigation and the way of procedural operation, and promoted the transformation of judicial services from “fragmented” to “centralized”, from “paper-based” to “paperless”, and from offline to online. The data of empirical research in the Court of Justice of the People's Republic of China show that after the implementation of the online litigation system, the rate of public announcement has significantly decreased to 51.38%, the number of pages of the archived case files has been reduced by more than 26 pages on average, and the number of cases filed has been reduced by more than 20 pages on average. Page numbers were reduced by more than 26 pages on average, and sending procedural documents to the parties was reduced by more than 17 pages on average, realizing effective saving of judicial resources. The results of the questionnaire survey showed that judges and parties rated time efficiency, procedural efficiency and convenience of litigation participation above 4.0 points, reflecting the remarkable effectiveness of the online litigation system in enhancing the efficiency of court hearings. Especially in the user experience dimension, the satisfaction ratings of judges and parties were as high as 4.61 and 4.70 respectively, proving the advantages of the online litigation system in enhancing user experience. However, the study also found that the current online litigation system still has deficiencies in terms of system stability and interface friendliness. In the future, the technical architecture of the online litigation system should be further improved, the user interface design should be optimized, and the system security should be strengthened, while the procedural rule system adapted to digital litigation should be constructed, so as to promote the in-depth fusion of the traditional trial mode and digital technology, and to promote the unity of judicial justice and efficiency.

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