

Construction of Rural Revitalization Smart Audit Platform based on Performance Audit Perspective

Xinyi Li, Jie Cheng, Chenxi Zhou, Ziyi Guo, Ying Yang

Nanjing Audit University, Nanjing Jiangsu, 211815, China

Abstract

With the continuous development of modern information technology, many fields are developing in the direction of intelligence. This paper analyzes the shortcomings of traditional rural revitalization project audit methods and the shortcomings of existing smart audit platforms, and on this basis, optimizes the smart project audit platform from the perspective of performance auditing. From the three dimensions of data acquisition, data processing, and data result application, build a smart audit platform model with three levels of data layer, logic layer, output layer and technical support, in order to optimize the existing smart audit platform and further help rural revitalization and development implementation of the strategy.

Keywords

Rural Revitalization; Smart Audit; Engineering Performance Audit.

1. Introduction

In recent years, the rapid development of information technology represented by big data, blockchain, artificial intelligence, etc. has had a profound impact on many industries including auditing. The drawbacks of traditional auditing work are increasingly exposed. Large-scale coverage; manual-based work mode is easy to miss, ignore problems, and affect project quality; traditional audit power is limited, and it is difficult to process massive data, etc. [1]. As a data collection characterized by large capacity, various types, fast access speed, and high application value, the emergence of big data technology has brought huge opportunities for engineering auditing. Audit institutions and internal audit institutions at all levels are actively using big data technology, build an engineering intelligence audit platform, and then improve the quality and efficiency of engineering audit work, and promote the construction of engineering audit informatization [2].

In the construction of related engineering projects in my country's rural revitalization, the problems of investment waste such as unsatisfactory investment performance and repeated construction still exist, and engineering performance auditing plays a role in monitoring and evaluating the economy, efficiency and effectiveness of engineering projects from the perspective of auditing. , and then promote the improvement of the management level of the project. At present, the development of engineering performance audit in my country is still faced with a series of problems, including audit time lag, lack of timeliness, relatively simple and backward audit methods, and low value of audit results. For affordable housing projects, Tian [3] proposed that a shared engineering intelligence audit platform should be established, and big data networking audits should be strengthened, so as to realize dynamic management of data information, reduce audit risks, and improve the quality and efficiency of engineering performance audits. At the same time, Wang Jie[4] and others believe that the performance of social and environmental responsibilities of the project construction party has the characteristics of cross-regional and cross-administrative regions, and a corresponding engineering audit platform can be established with the help of information technology to share

information and data. Help auditors grasp the key points of auditing, and then strengthen performance auditing, and promote the transformation of performance auditing from partial auditing to comprehensive auditing.

It can be seen that the audit model based on big data technology is the current development trend of engineering audit, and has played an important role in promoting rural revitalization. In terms of how to build a smart audit platform, Zuo Yongmei [5] proposed to use the IaaS, PaaS and SaaS basic technology platforms in the cloud service model to split the cloud service big data audit platform into four sub-platforms of information collection, processing, analysis, and visualization, to help the implementation of big data auditing; Liu Guocheng [6] and others proposed that the Hadoop system can be applied to divide the big data auditing platform into five systems: data center, collection, preprocessing, analysis and visualization, in order to achieve full coverage of audit supervision; Wang Xuerong; [7] et al. proposed a data-based auditing model based on the "point-line-surface" thinking, and built a big data engineering audit platform on this basis. However, the current research on big data auditing is still in the exploratory stage, and the construction of big data auditing platforms is mostly from a macro perspective, which has limited practical significance for engineering auditing. Therefore, based on the perspective of performance auditing and combining the characteristics of rural revitalization and engineering auditing, this paper builds a smart auditing platform to provide support for future engineering performance audits based on the smart auditing platform, and effectively help promote the rural revitalization strategy in an all-round way.

2. The Current Problems and Optimization Directions of the Smart Audit Platform from the Perspective of Performance Auditing

At this stage, the construction of related engineering projects in my country's rural revitalization is faced with a series of problems such as unsatisfactory investment performance, repeated construction and other investment waste. With the in-depth development of the rural revitalization strategy and the rapid improvement of economic and technological levels, the traditional rural revitalization project auditing methods have been unable to process massive data efficiently and with high quality. Audit informatization and intelligence have become an inevitable trend in the development of project auditing. However, due to the fact that the time for smart auditing is still short and the technology is not perfect, the platform at this stage still has a lot of room for optimization. Based on this phenomenon, this paper studies how to optimize the smart audit platform to help rural revitalization and development.

(1) Research on the usage of smart audit platform

This paper takes 200 people engaged in audit-related work in Jiangsu as the object of investigation. From the perspective of performance auditing, the survey is carried out in the form of questionnaires on the use of the smart audit platform. The main feedback questions are as follows:

①. There are problems with platform data security

The operation of the smart audit platform requires a strong database as support, but there are still certain security risks in cloud computing and cloud security at this stage, and the country's laws and regulations on data are still not perfect [8], therefore, data security and network security are technical issues that need to be solved urgently in the context of big data auditing. The big data auditing platform covers There is a large amount of undisclosed and confidential information of the unit under review, and it is necessary to pay close attention to a series of security issues such as data leakage, data theft, and loss. [Wen Hao. Big Data Drives Smart Audit - Financial Big Data Audit Trends and Challenges [J]. Finance and Accounting Learning, 2022 (02): 114-116.]

②. The penetration rate of smart audit platforms is not high

The survey shows that 58.35% of the staff have never used the smart audit platform and still adhere to the traditional auditing model. Among those who have used it, only 7.69% are frequent users, and the rest are occasional users. It can be seen that the penetration rate of the platform among audit practitioners is not very high, and most auditors are reluctant to try new technologies and still rely on the traditional audit model, which leads to great obstacles to the popularization and promotion of the smart audit platform.

③. Difficulties in performance audit data collection

The survey shows that the biggest problems auditors face when obtaining the data required for performance audit are: ① The data reliability is not high; ② The effective data cannot be obtained in time; ③ The obtained data cannot be used directly

In the process of performance auditing, the amount of data available to auditors is too large, and the data quality is also uneven, which makes it difficult to guarantee the reliability of the data; at the same time, the system data format is incompatible with the data required for the audit, resulting in the obtained data. Data cannot be used directly, and effective data acquisition needs to be screened, which is difficult to obtain in time, which indirectly leads to the high cost of data collection, which brings considerable obstacles to the collection of audit data, which in turn affects the promotion of smart audit platforms.

④. Auditors don't pay much attention

According to the survey, auditors' evaluation of the application of performance audit results is not high, only 23.08% of them think it is very effective, and the rest of the evaluations think its effect is average or basically ineffective. It can be seen that auditors do not attach much importance to performance auditing, and their understanding of performance auditing often only stays in the economic aspect, while ignoring its positive role in promoting project quality and efficiency.

⑤. The relevant learning and training of smart auditing is not in place

The survey shows that more than 80% of the auditors who have used the smart audit platform said that their unit currently does not provide employees with smart audit-related training, and the trained auditors only understand the smart audit platform. It has not explored the application of the smart audit platform in depth.

⑥. The shortage of professionals

The survey shows that the development and application of the smart audit platform requires auditors to have a relatively comprehensive professional knowledge reserve, as well as strong computer operation capabilities. At present, the level of economic development in various regions is different, resulting in serious differences in the professional ability of talents. At the same time, there are very few talents with professional knowledge of auditing and computer. This problem also seriously hinders the development of intelligent auditing platforms.

(2) Suggestions on the construction and use of the smart audit platform

In view of the problems existing in the use of the current engineering smart audit platform, in order to better realize the smart audit to help rural revitalization, this paper believes that the construction of the smart audit platform can carry out related work in the following aspects:

①. Improve platform data security

With the advent of the era of big data, data has become a very important resource. The state should speed up the improvement of relevant systems to ensure the security of data. At the same time, the platform should also improve the system to ensure the security of the storage of private data of the audited units.

②. Popularization and promotion of the smart audit platform

Increase the promotion of the smart audit platform, popularize the use of the smart audit platform to audit practitioners, rather than stay on superficial propaganda, and at the same time develop smart audit systems suitable for different types of businesses.

③. Data filtering and processing

(1) Screening and verifying the massive data that can be collected to make the data real and effective;

(2) Update the database in real time to ensure that users can obtain the latest and most effective data;

(3) Process the format of the data, so that the auditors can access and use the data of the platform at any time;

(4) Improve the credibility of the platform, so that owners are willing to provide data.

④. Cultivation of professional talents

At present, the rural grass-roots audit professionals are scarce, and some work needs to be carried out by hiring external personnel. However, this part of the personnel often cannot complete the audit work well because of their understanding of the basic engineering audit. Therefore, it is necessary to cultivate professional talents. Vigorously cultivate relevant professionals, encourage training of auditors in related aspects of intelligent auditing, and increase the attention of auditors to this. At the same time, the learning of this knowledge can be added to the core courses of relevant majors, so that talents can have relevant professional talents before taking jobs, saving time and cost.

3. The Idea of Building a Smart Audit Platform Model

(1) Platform design ideas

According to some suggestions on the smart audit platform obtained in the questionnaire and the analysis of the problems of the existing platforms in the market, in order to assist the audit of rural revitalization related aspects, optimize the traditional audit, and promote the smart audit, this paper will focus on the audit data source and processing, Analysis of audit results and other aspects to propose platform improvement design plans.

In terms of data acquisition, the engineering intelligence audit platform will expand data sources, and it is necessary to analyze the authenticity and accuracy of data. Technology professionally processes these data to make the data reliable and effective, and at the same time classifies the data to unify the quality of the data, which is convenient for auditors to check.

In terms of data processing, this platform draws on the technology of Power BI to visualize data. First, it can connect various mainstream data sources, edit, model and visualize data, and also publish visual charts to the enterprise organization or mobile phone. The second is the interactive analysis between charts or reports, for example, clicking on a certain graphic data in the chart will highlight the graphics of the data in other charts at the same time; You can filter directly in the query conditions constructed by the slicer, which will change the data values of all charts in the current report at the same time. [Jia Yunbin. The application of the visualization chart of Power BI, a powerful tool for data analysis [J]. Computer programming skills and maintenance, 2019(03):71-73.DOI:10.16184/j.cnki.comprg.2019.03.021.]

When the data analysis results come out, auditors can drag and drop dimensions to analyze, which is more intuitive. When displaying the data processing results, the platform will present the problems and reasons of abnormal data. The final report is generated, and the system will display it in more detail from the detailed list, business theme analysis, etc. The reports generated by this platform will be viewed by people who meet different needs. For example, those who only need to understand key indicators, the platform will capture a large amount of data through big data technology, and improve the ability to judge project performance audit,

so as to obtain Produce a comprehensive and accurate audit performance analysis report, introduce big data technology to learn and continuously optimize the project performance analysis report and audit problem guidelines, and directly reach the problem area; for those who need detailed indicators, the platform will assist in building relevant data analysis models and Judgment rules help analyze relevant data purposefully, and can quickly import and export data, making it more convenient for auditors to prepare audit reports.

(2) Construction of the platform

From the perspective of performance auditing, it is necessary to carry out auditing work focusing on the economy, efficiency and effectiveness of the project. That is, to audit the resources and cost expenditures during the construction of the project; to audit the utilization of the resources, funds, and manpower involved in the project; to audit the realization of the expected goals of the project, focusing on capital usage and the degree of completion of the project. In the traditional rural revitalization project audit method, the human factor accounts for a large proportion, and most of the work relies on professional and technical personnel to carry out, with certain uncertainties and many potential problems. The smart audit platform can rely on Internet technology to collect and compare data through algorithms to minimize errors in audit results caused by human factors and ensure the authenticity and reliability of audit work. Therefore, the structure of the smart audit platform based on the perspective of performance audit can be simplified into three levels and one guarantee, namely the data layer, the logical layer, the output layer and the technical guarantee, as shown in Figure 1.

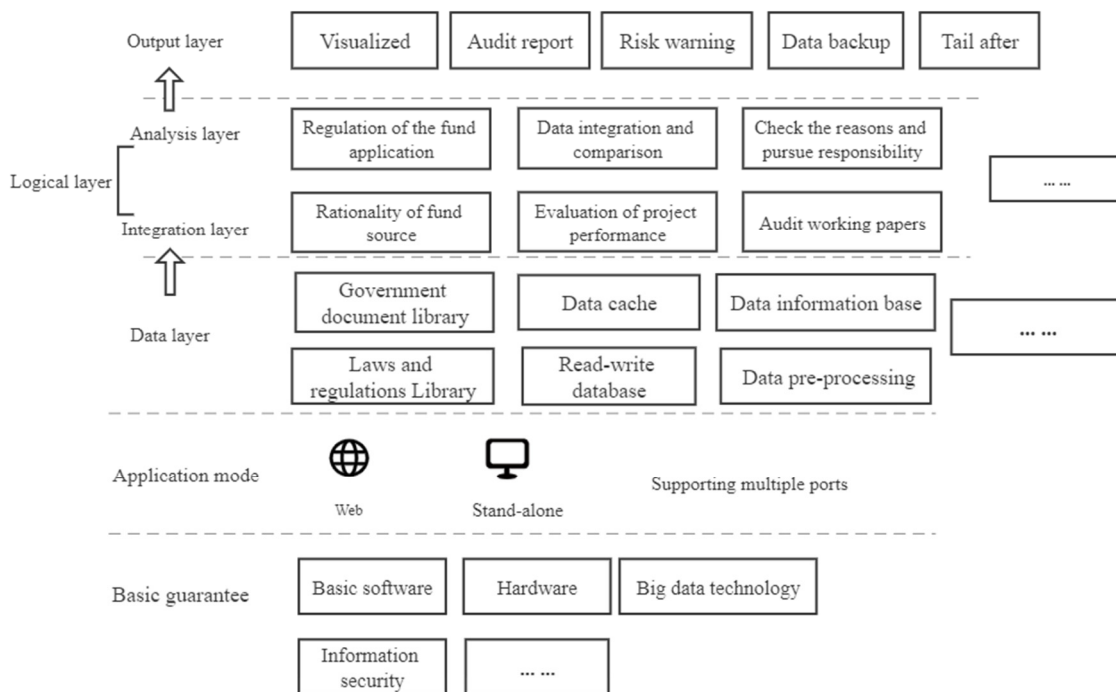


Figure 1. Overall architecture of the smart audit platform

3.1. Data Layer

In the traditional rural revitalization project audit, the data sources and evidence collection methods are relatively simple. In addition, the rural revitalization project has strong capital liquidity and high requirements for data processing, and there are certain difficulties in the efficient development of audit work. The smart audit platform combines traditional audit data acquisition methods with artificial intelligence. On the one hand, the published information, such as relevant legal documents, relevant national policies, existing relevant audit cases, etc., is aggregated through big data information technology. While the data source is reliable, it is

more standardized and tidy, which is convenient for users to operate and the system to make subsequent judgments on the data. Users can query the required documents through the search and comparison function in the system. On the other hand, the platform users manually enter the relevant data and information of the project, such as: the name of the project, the time, the contractor, etc., to form a project-specific information database. After the data collection is completed, information resources are shared among the sub-databases to support the subsequent integrated analysis of the platform. At the same time, the entered data is archived for the convenience of secondary use by users and access by other users. Through the multi-party collection of data, the audit work is escorted.

3.2. Logic Layer

Logical processing and analysis of the collected data, such as feature analysis, correlation analysis, etc., is the core component of the platform, which includes two levels: the integration layer and the analysis layer. On the whole, the platform built in this paper adopts the logical framework of "total-point-total", that is, first conduct an overall analysis of the acquired data to find problems; then analyze and process the problems individually; and finally summarize to support the follow-up. Work.

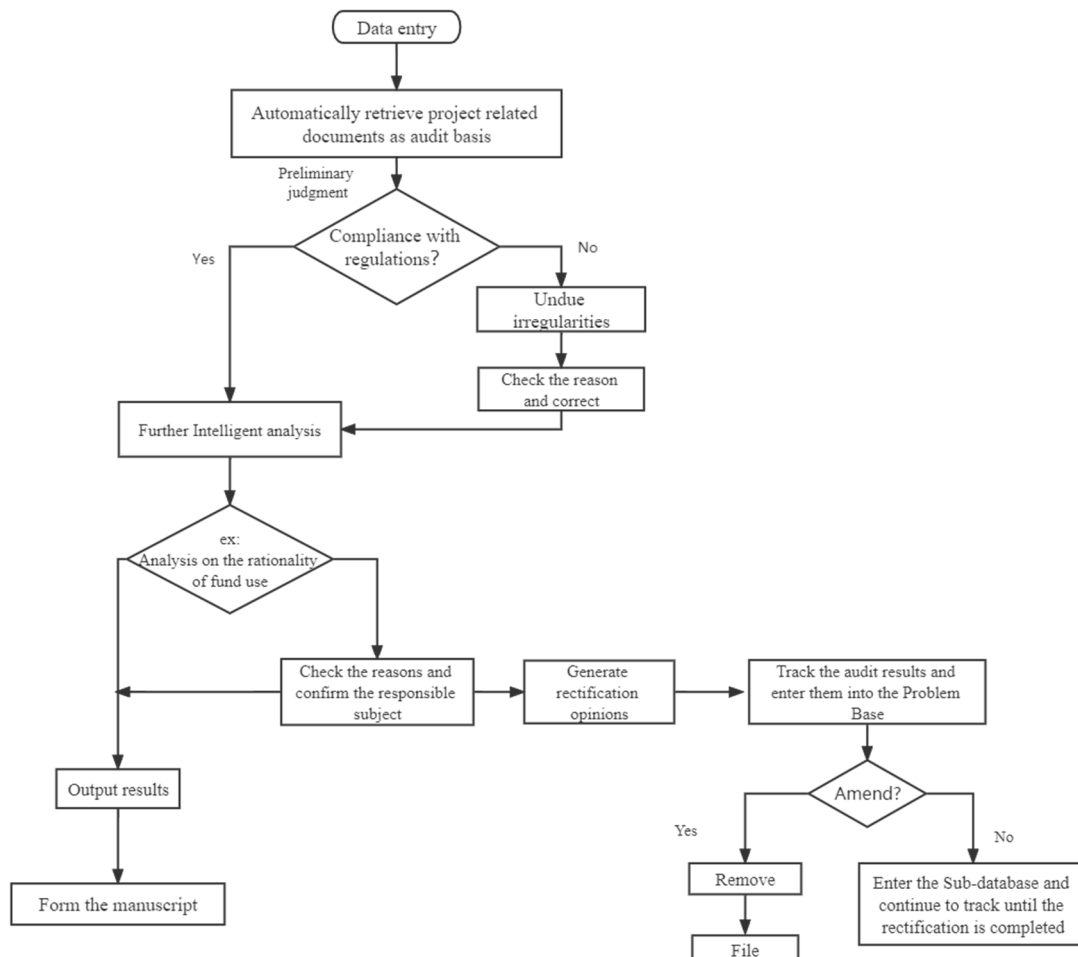


Figure 2. Logical judgment process (taking the use of funds as an example)

(1) Integration layer. After the data entry is completed, the entered data is integrated and preprocessed. That is to preliminarily screen out the data required for follow-up work such as the amount and type of expenses of the project, and conduct a preliminary review of the legality and compliance of the audit project according to the documents in the sub-library such as the

regulatory database. Through data preprocessing, it is possible to effectively screen out the project data that does not meet the regulations, record the problem, upload the problem report, and automatically classify it into the next program stage

(2) Analysis layer. From the perspective of performance auditing, the focus is on whether the use of funds is correct and effective. Therefore, based on the data collected by the integration layer, the backend of the system will rely on the algorithm program to determine the performance audit evaluation objectives and specific evaluation contents, and select the audit evaluation indicators that are consistent with the audit objectives in the indicator library, and further analyze the data. decomposition. First, by tracing the data to the source and comparing the relevant documents in the regulatory library, the legal compliance of the source of funds is reviewed. Secondly, determine the key evaluation indicators, and assign points according to the evaluation indicators through the project-related information entered by the user, such as: the expected results of the project, the completion of the project, etc. After the evaluation of all indicators is completed, the project performance is scored in a weighted summary manner. At the same time, in the process of data processing, the problems found in the audit are marked, and the reasons are checked through data comparison to determine the responsible subject. Finally, output the results, generate audit papers and hand over to the next level. Taking the use of funds as an example, the judgment process is shown in Figure 2.

3.3. Output Layer

Display the results in a visual way. On the one hand, combined with the results obtained from the analysis of the logic layer, the audit results are presented to the user, early warning of possible risks is performed, an audit report is generated, and the audit situation is recorded and stored in the library. On the other hand, the projects with problems that need to be rectified are backed up to the sub-repository, and the rectification situation is continuously tracked until the rectification of the problems is completed, and the project is removed from the problem database.

3.4. Technical Support

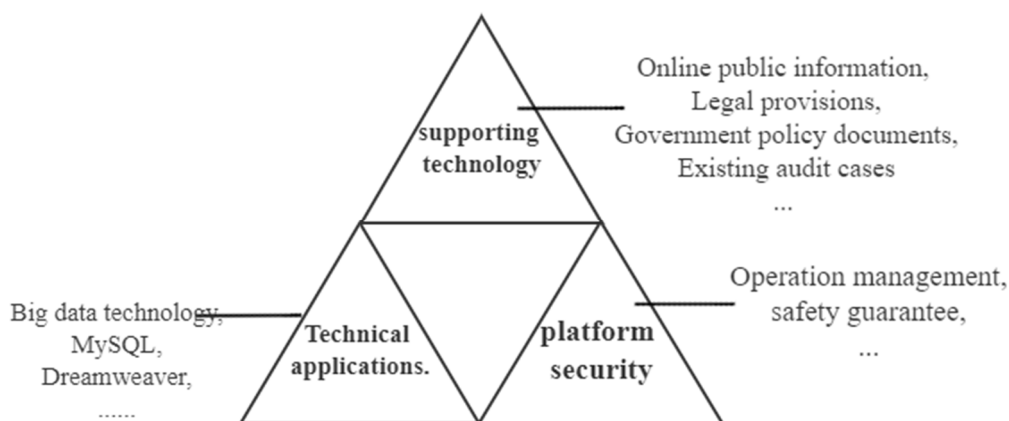


Figure 3. Technical framework

The construction of the platform needs to consider information security, computer storage, platform system and other aspects. Generally speaking, it can be divided into three aspects: platform guarantee, supporting technology and technology application, as shown in Figure 3. In terms of platform assurance, it is mainly divided into platform operation and maintenance and security assurance. During the operation of the platform, considering that the network signal in some areas is unstable, the platform is divided into two modes: the online version and

the stand-alone version, to ensure that the rural grassroots audit work can be carried out normally. At the same time, the back-end is maintained in real time to ensure the smoothness of use; at the same time, the safety supervision of user information is carried out to ensure that users are safe and at ease. In terms of supporting technology, it is mainly the data required for platform operation judgment, that is, network public information, relevant documents, existing audit cases, etc. In terms of technical application, it mainly relies on big data application technology to realize the effective use of resources and information sharing. Relying on Mybatis to build the overall framework of the platform to ensure the stable operation of the backend and track the results.

4. Summary

Based on the strategic requirements put forward by rural revitalization, the agricultural industrialization consortium project, the agricultural industry strong town project and other engineering projects have been implemented on a large scale. However, in the wave of the information age, the drawbacks of the traditional audit work model are increasingly exposed, and the intelligent engineering audit platform emerges as the times require. Based on the smart audit platform model proposed by some scholars, this paper analyzes the "blocking points" of the current big data audit platform, and takes the construction of the smart audit platform from the perspective of performance auditing as the theme, and designs a questionnaire for engineering audit practitioners. Questionnaire data and previous processes of paper retrieval, field visits, online visits, etc., deeply analyze the problems and optimization directions of the construction of the smart audit platform from the perspective of performance audit. And from the three dimensions of data acquisition, data processing, and data result application, a smart audit platform model with three levels of data layer, logic layer, output layer and technical support is built, in order to optimize the existing smart audit platform and further promote its Application in engineering performance auditing. Through the optimization of the intelligent audit platform, it can better assist the high-quality development of rural revitalization, reduce the possibility of corruption, improve the audit efficiency, and put the relevant funds into the "pocket" of rural revitalization infrastructure construction.

Acknowledgments

Fund Project: 2021 Jiangsu Province College Students Innovation and Entrepreneurship Training Program Project "Research on the Strategy of Engineering Audit Helping Rural Development and Revitalization - Taking Jiangsu as an Example" (202111287009Z).

References

- [1] Yang Linhai. Reflections on engineering auditing under the background of big data [J]. Housing and Real Estate, 2021(33):23-24.
- [2] Jiang Nan. On the reform and development of national auditing in the era of big data [J]. Finance and Accounting Monthly: 1-5.
- [3] Tian Xian. Research on performance audit of affordable housing project in S County [D]. China University of Mining and Technology, 2021.
- [4] Wang Jie, Wang Ligu. Research on the realization path of "Internet + Engineering Audit" in my country [J]. Finance and Accounting, 2016(16):45-46.
- [5] Zuo Yongmei. Research on the construction of big data audit platform based on cloud computing environment [J]. Management and Technology of Small and Medium Enterprises (late issue), 2020, (09): 95-97.

- [6] Liu Guocheng, Ma Xinmeng, Xu Zhi. Research on the construction of big data audit platform driven by full audit coverage [J]. Friends of Accounting, 2021(11):125-132.
- [7] Wang Xuerong, Hou Weilong, Hu Yixiao. Construction of Big Data Smart Engineering Audit Platform--Data-based Audit Mode Based on "Point-Line-Aspect" Thinking [J]. Finance and Accounting Monthly, 2021, (17): 92-97 .
- [8] Huang Changjiao. Research on the application of intelligent auditing under the background of big data [J]. Modern Commerce and Industry, 2019, 40(34): 106-107.
- [9] Wen Hao. Big Data Drives Smart Auditing - Financial Big Data Audit Trends and Challenges [J]. Finance and Accounting Learning, 2022(02):114-116.
- [10] Jia Yunbin. Application of visualization charts of Power BI, a powerful tool for data analysis [J]. Computer Programming Skills and Maintenance, 2019(03):71-73.DOI: 10.16 184/j. cnki. comprg. 2019. 03.021.