



Application Strategies for Tax Digital Management Systems in Tax Planning for Large Corporate Groups

Jie Li^{1,*}

¹ School of Economics, Trade and Business Administration, Xuchang Vocational College of Ceramic, Xuchang, Henan, 461000, China

SUMMARY: *To address challenges in tax services and achieve digital transformation in tax administration, this paper proposes a tax digital management system and explores its application strategy within large corporate groups. This paper outlines the research feasibility and primary design requirements of the system, providing a foundation for subsequent development of the tax digital management system. First, a classification coding model for tax invoice transaction behaviors is proposed. This model integrates an attention mechanism to extract multi-level features from short text within tax invoice behavior data. Second, a high-concurrency transaction behavior coding query system based on this model is constructed to support diverse query requests. Third, Baidu Maps API is utilized to reveal geographical distribution disparities within the tax industry. Finally, a knowledge graph visualization of taxpayers is presented based on multi-source tax data. Results demonstrate that the proposed model achieves an average accuracy rate of 98% in transaction behavior recognition. This system enhances the precision of tax planning and improves the stability of tax management execution, offering significant reference value for modernizing tax management in large conglomerates.*

KEYWORDS: *Attention Mechanism; Transaction Behavior Classification; Baidu Maps API; Knowledge Graph Visualization; Tax Digital Management System*

1 Introduction

Tax management refers to the overall process by which enterprises handle their tax-related operations and fulfill tax declaration and payment obligations[1]. In most corporate groups, tax management systems operate independently from financial management systems, resulting in low data sharing capabilities and poor information communication between financial information systems and tax management systems. Tax digitalization management can advance the transformation of tax and financial management toward shared, integrated, deepened, intelligent, digital, personalized, integrated, and standardized systems from an “Internet + Tax + Finance” perspective[2, 3]. Simultaneously, integrating tax digitalization with financial management enhances the effective alignment of financial data and tax information. This enables automated invoicing, tax calculation, and unified tax-invoice management during financial operations[4, 5]. Through data monetization and other means, it reduces corporate financial and tax risks, thereby continuously improving tax management standards[6, 7].

In the big data era, implementing tax management digitalization practices helps enterprises enhance the quality and efficiency of tax administration[8]. Reference [9] examined the

*15136869768@163.com

<https://doi.org/10.65102/is2026621>

effectiveness of digital technologies in addressing challenges in Russia's national tax administration development, demonstrating that digital technologies can mitigate tensions between tax authorities and taxpayers. Reference [10] employed a multi-period difference-in-differences model to prove the advantages of digital tax management in corporate earnings management, attributing this to reduced information opacity and diminished tax avoidance behaviors. Furthermore, [11] employs multiple regression analysis to examine the relationship between digital knowledge management and tax efficiency. Results indicate that digital knowledge management accounts for 31.5% of the variance in tax efficiency, and that collecting, storing, and sharing tax-related information significantly enhances corporate tax efficiency. Literature [12] quantitatively examined the impact of digital tax reforms on Nigeria's tax administration, concluding that integrated tax management systems optimize tax administration through operations such as simplified identification and automation. Literature [13] indicates that digital tax management enhances tax collection efficiency and compliance while reducing tax evasion. Findings demonstrate that digital tax management significantly lowers local government debt levels, with this effect being more pronounced in regions with higher information accessibility.

Digital tax management systems assist administrators in making operational decisions and improving financial management effectiveness. Literature [14] employs a multi-criteria decision model to analyze digitalization's impact on tax administration, demonstrating that digital systems reduce administrative costs by 20–25%, lower the tax gap to 11.5%, and elevate Azerbaijan's tax administration efficiency index to 87.95 points. In the literature, the putting into practice of the Comprehensive Tax Management System and the Tax-Optimization-Max system caused the automation and integration of tax collection and administration [15]. The application of Taxpayer Identity Codes, together with the Overall Tax Administration System and the Tax-Optimization-Max project, has greatly promoted the tax administration efficiency of Nigeria's Federal Inland Revenue Service.

The digital revolution occupies the important place in tax management work and taxpayer compliance behavior. This thing lets tax organs reduce the administrative and compliance expenses, enhance the efficiency of working procedures, and promote the transparency of services which are provided to taxpayers [16]. Under the environment that is pushed by data, going deep into digital methods for enterprise tax management has quite big practical meaning and relevance.

Traditional tax management frameworks meet problems in satisfying the effective compliance demands of big enterprise groups. This research treatise evaluates the feasibility of a system through employing neural network models to identify transaction behaviors according to tax invoice data. After that, therefore, it utilizes a high-concurrency data inquiring system to process big amounts of transaction data in an effective way. Through utilizing the Spark big data frame and methods for building multi-source knowledge graphs, this research carries out deep discussion on the industrial and regional distribution frame inside tax management areas. It also reveals the various connections which exist between enterprise taxpayers within matters which relate to tax. For the purpose of making an assessment of the performance of this system, the corresponding experiments have been conducted by us. Furthermore, the actual application examples were utilized to give a meticulous analysis of the effectiveness of this system.

2 Feasibility and Related Requirements for a Tax Digital Management System

2.1 System Feasibility

2.1.1 Operational Feasibility Analysis

At the early period of constructing a digital tax handling system for big enterprise groups, the exploitation and use environment of this system utilized VB6.0 as its basic platform. The software surface of this system is very friendly to users and good in vision, thus providing users an intuitive and convenient method for operation. This kind of design lets it more convenient for users to learn and begin to use the system, and at the same time, it ensures the operational feasibility.

2.1.2 Economic Feasibility Analysis

The enterprises of this type which use digital tax handling systems, they mainly depend on special enterprise internal networks. The sum total of users of these special networks exceeds the number of the public internet. Therefore, the demands on both databases and web servers are comparatively low. This therefore greatly decreases the investment which is needed for this system. Owing to the powerful support of B/S tax management technology, the expenses connected with follow-up tax administration work, basic system maintenance, and function promotion are also very little.

2.1.3 Technical Feasibility Analysis

When we make a digital tax control system for enterprise, the statistical methods which are used depend on modern, firmly established application programming languages. In analyzing tax-related data for large conglomerates, the primary tasks involve querying and compiling tax foundation data, calculating tax accruals, and conducting data analysis. These functions have relatively low technical requirements, making the system technically feasible. Simultaneously, during technical development, existing information systems available in the market can be referenced. By incorporating the technical characteristics required for developing such systems at this stage, functional development standards can be achieved. Therefore, after the tax information management system is developed, it must possess robust comprehensive capabilities to facilitate the rapid implementation of overall tax information technology development.

2.1.4 Safety Analysis

To fully ensure the normal operation of large corporate tax digital management systems and guarantee the security of internal information data within such systems, the following considerations must be addressed during further design and application development: First, from the perspective of each user accessing the system, users must complete corresponding valid authentication before logging into the information management system. Only upon confirmation can they successfully log in and access the relevant system interface.

Second, from the system administrator's perspective, administrators maintain the tax digital management system solely by managing internal functional modules without arbitrary access to any user's personal data. This approach can ensure that the security level gets promoted when the personal data which are stored inside the system are being analyzed.

Thirdly, the entire digital tax management system has integrated special safety monitoring

and alert mechanisms that are for system non-conformities. After the system has the detection that possible data leaks exist, it by itself causes the starting of security alerts and notifications. This therefore greatly enhances work safety, thus protecting individual information.

2.2 System Requirements

2.2.1 System Functional Requirements

The system's ability in data storage management is mainly divided into three parts: data buffering, main data keeping, and auxiliary data holding. The core work of cache elimination is to regularly get rid of the non-original content data which is provided by the system, and use pre-established cache clearing methods to complete its various operation tasks.

For accurate distinguishing of different kinds of user login types, this operation system could require an inside user login management system. According to the tax management demands of large enterprise groups, these login permissions may generally be divided into two kinds: front-end tax logins which are completed at company business sites and back-end logins which serve for corporate tax management positions.

Business works connected to questions can be divided into two main kinds on the basis of the main body that asks for information: questions that are put out by sale personnel and queries that center on tax management main bodies.

In the big enterprise tax digital management systems, the procedure of incident handling and settlement often deviates from normal working steps. For promoting the timeliness that people use the tax digital management system, the system must adopt a dual-tax warning management model which includes both mobile online and mobile offline channels.

2.2.2 System Non-Functional Requirements

Beyond the system's specialized functional requirements, this information system may also necessitate the development of additional non-functional information systems. These can be broadly categorized into: - Credit Confidentiality Information System - Public Information System - Generative Information System - Evaluation Management System

At the operational level of the confidential tax system: We require the implementation of multiple security measures—including user account-based login, tiered information access, and restricted data editing—to effectively safeguard the tax information security of relevant tax information administrators. This ensures the fundamental objectives of system outsourcing and confidentiality are met.

At the public system level, the software primarily provides specific public processing procedures. For certain tax disposition outcomes that are relatively well-defined and suitable for public disclosure, or for outcomes requiring timely public notification as mandated by relevant national tax authorities, specific tax processing personnel may submit applications for review by higher-level departments.

At the output generation model application level: Depending on different tax scenarios, networked tax information management generation systems may require users to provide specific text-based input generation patterns.

At the evaluation service system development level: The ultimate objective of China's corporate tax management evaluation system remains effectively resolving tax issues raised by employees and clients to foster positive service feedback. Guided by this evaluation principle, we propose designing a specific feedback evaluation mechanism—built upon the tax feedback system's functionalities—to reflect the effectiveness of tax system management efforts.

3 Neural Network-Based Tax Digital Management System

3.1 Overall Architecture of the Tax Digital Management System

Addressing the practical challenges and specific needs encountered by tax professionals in large conglomerates during tax coordination efforts, this study investigates four key areas: a tax invoice transaction behavior classification coding model, a high-concurrency transaction behavior classification coding query system, regional industry analysis, and multi-source tax data graph construction. Solutions tailored to each issue were developed, culminating in the integration of all application modules within a neural network-based intelligent tax system—thus forming the complete intelligent tax system. The overall system architecture is illustrated in Figure 1. Modules are interconnected: regional industry distribution analysis and tax graph visualization both utilize transaction behavior invoice data. Industry analysis and graph-based invoice flow construction rely on transaction behavior data with classification codes provided by the neural network-based classification coding module.

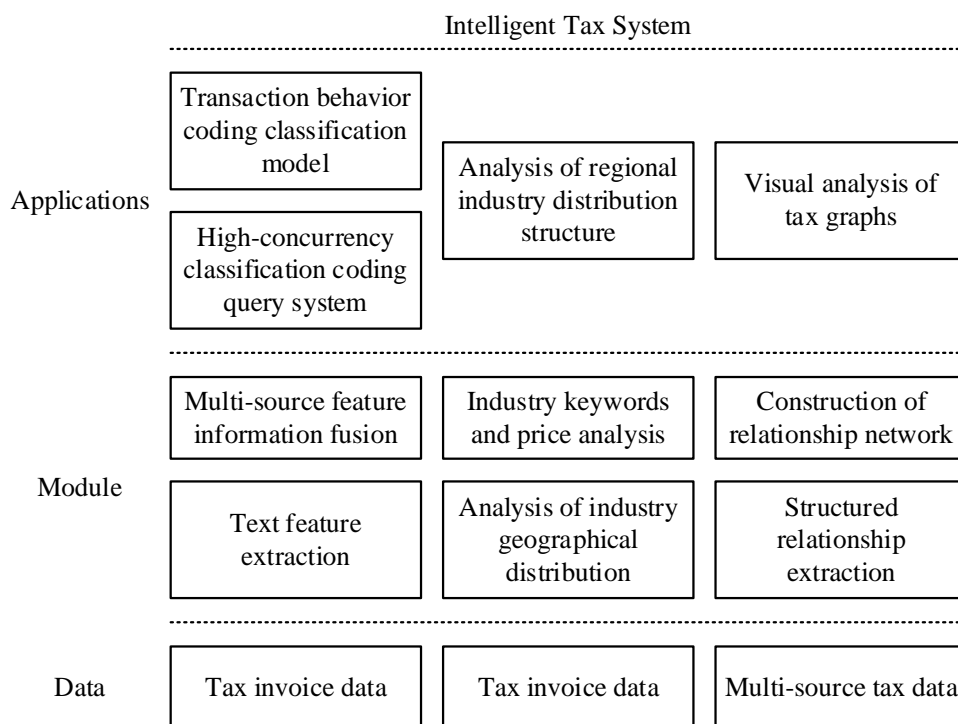


Figure 1: The tax digital management system

3.2 Transaction Behavior Classification and Coding Model Based on Tax Invoice Data

The system architecture diagram of the transaction behavior classification coding framework is shown in Figure 2.

Step 1: Extract three fields—commodity/service name, unit, and tax classification code—from labeled data. Perform Chinese tokenization on commodity/service names and units. After tokenization, text representations at the token granularity level are obtained.

Step 2: Perform word embedding [17] to convert the textual word or character set into a matrix composed of vectors as input for the network. \oplus denotes a concatenation operator, which concatenates word vectors to obtain matrix M:

$$M = v_1^w \oplus v_2^w \dots \oplus v_i^w \dots \oplus v_T^w \quad (1)$$

Step 3: For product and service names, obtain their word-level and character-level embedding matrices. Input these into separate Bi-RNN[18] layers to extract contextual features of words. The number of words after name segmentation passes through a distribution map. The bidirectional RNN comprises a forward RNN (forward reading of the word sequence from w_1 to w_T) and a backward RNN:

$$\vec{h}_t = \overrightarrow{RNN}(x_t), t \in [1, T] \quad (2)$$

$$\overleftarrow{h}_t = \overleftarrow{RNN}(x_t), t \in [1, T] \quad (3)$$

Step 4: Next, apply a CNN layer to extract features from the input unit information. After word segmentation, unit information typically consists of one or two words. Use convolutional kernels of varying sizes to extract features of different dimensions.

Step 5: For the bidirectional hidden layer feature h_t extracted by Bi-RNN at time step t , we use it as input. Through the attention mechanism, we obtain the weight representing the importance of each word or character to the current text's semantic meaning. We then multiply this weight by the hidden layer vector of the corresponding word or character at that time step to compute the weighted feature vector.

Step 6: For feature maps extracted by the CNN[19] layer, we apply a pooling layer. Through pooling, we obtain fixed-length vectors from the feature maps.

Step 7: Input vectors from the attention layer and pooling layer into a fully connected layer, mapping vectors to a 128-dimensional space. Concatenate these features and pass them through another fully connected layer to map to the sample label space. Both activation functions used are ReLU.

Step 8: The output from the fully connected layer is fed into a softmax function for vector normalization. The resulting output can be interpreted as the probability belonging to each category. The combinatorial encoder classifier then selects the category with the highest probability as the classification code for the transaction behavior.

The calculation of the softmax value is as follows: Given a vector with elements $v \in R^n$ and v_i , where i represents the value of the i -th element, the softmax value of v_i is

$$\text{softmax}_i = e^{v_i} / \sum_{j=1}^n e^{v_j} .$$

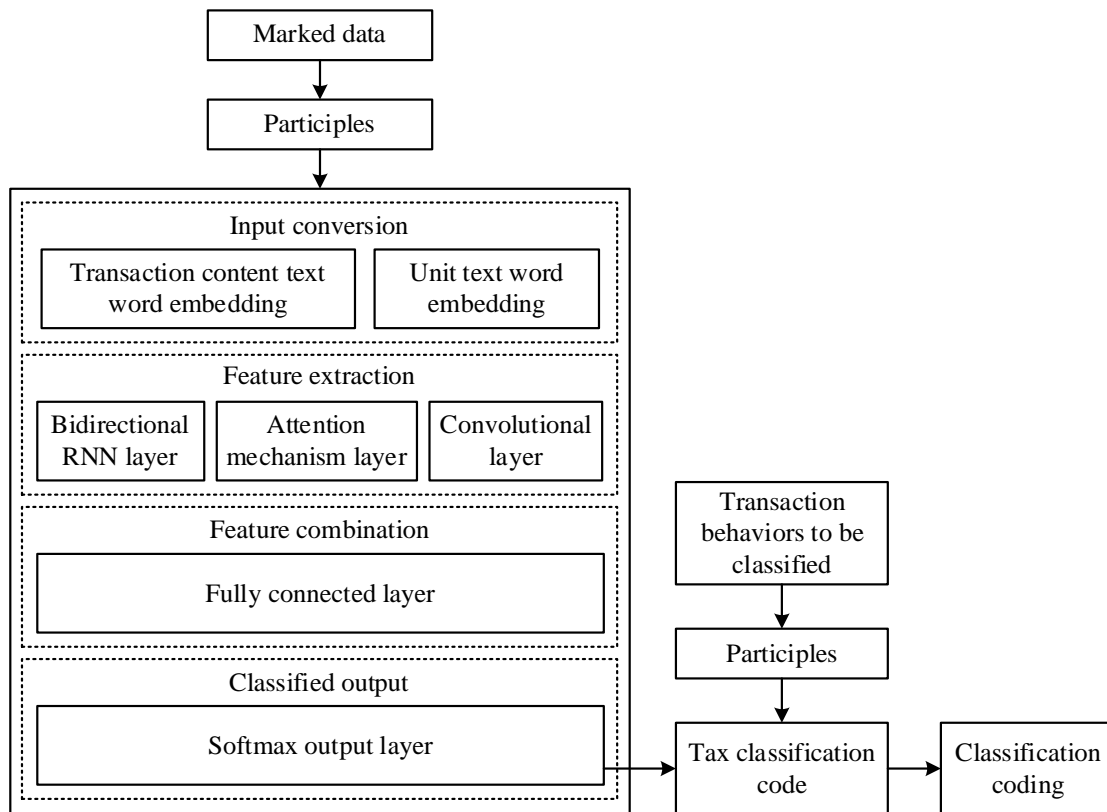


Figure 2: Flowchart of Tax Classification Coding

3.3 High-Concurrency Transaction Behavior Encoding Query System

The High-Concurrency Transaction Behavior Classification and Coding Query System comprises a massive data storage module, an offline model training module, and a query service module. Its overall framework is built upon Tornadowell and iNginx servers, integrated with the supervisor process management tool and nvidia-docker to enable rapid deployment of model deployment services. It supports both individual transaction behavior queries via a web interface and offline batch queries, accommodating diverse query request services. The overall architecture of the High-Concurrency Transaction Behavior Classification and Coding Query System is illustrated in Figure 3.

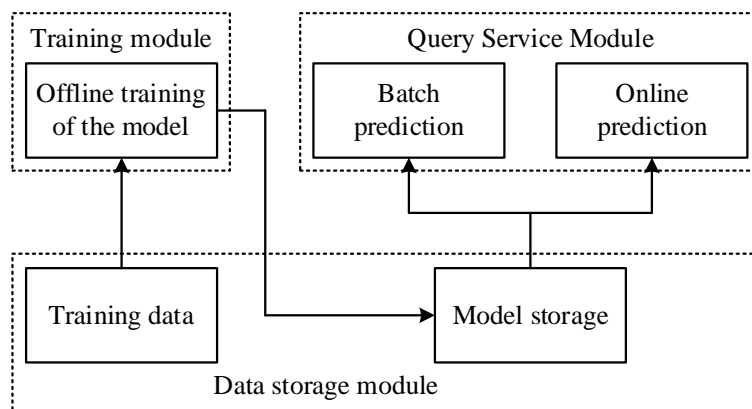


Figure 3: High-concurrency Transaction Behavior Segmentation Code Query System

The high-concurrency transaction behavior classification and coding query system comprises three components: a massive data storage module, an offline model training module, and a query service module. The data storage module provides data storage services for the entire system. Massive raw invoice transaction behavior data is stored on HDFS. Spark preprocesses the raw transaction behavior data, and the extracted dataset results are stored on disk. The preprocessed dataset is read by the model training module for training. The core of the training module is a deep learning model implemented based on the TensorFlow framework to predict the classification codes of transaction behaviors. The query service module uses Tornado to load and persist models. It employs Supervisor to monitor and manage multiple running model service processes. An additional layer of nginx is encapsulated around Tornado to perform request load balancing, distributing massive query requests across multiple service processes managed by Supervisor to support high-concurrency queries.

3.4 Methodology for Analyzing Industry Geographic Distribution Based on Tax Invoices

This chapter aims to investigate the relationship between regional industry distribution patterns and transaction behaviors based on massive tax invoice data, building upon an understanding of tax invoice transaction activities. Computations are performed using the Spark big data framework.

Industry Geographic Distribution Study. First, the addresses of both purchasing and selling parties are converted into latitude and longitude coordinates to examine the overall distribution characteristics of businesses. Subsequently, the distribution of enterprises within the province's textile, electrical appliance, and tea industries is analyzed. Finally, three electrical appliance enterprises in the province are selected to investigate variations in their sales geographic distribution.

Baidu Maps API is a free application interface provided by Baidu for developers, based on Baidu Maps services. It offers advantages such as broad coverage, timely data updates, and ease of operation. This data resource can be leveraged to calculate the specific location data of both parties involved in transactions. Using the Anaconda scripting language, the driving route planning interface within the Baidu Maps API was invoked to obtain the latitude and longitude information for businesses in each industry.

3.5 Knowledge Graph Based on Multi-Source Tax Data

3.5.1 Taxpayer Knowledge Graph Relationship Extraction

In the knowledge graph that belongs to taxpayers, entities are expressed as nodes. This graph includes within it the below kinds of entity nodes: nodes that belong to taxpayers, nodes that belong to tax classification codes, nodes that belong to natural persons, nodes that belong to regions, and nodes that belong to tax authorities.

3.5.2 Visualization of Taxpayer Knowledge Graphs

Invoice transaction records have the function of recording the business interactions between enterprises, and thus act as one of the links between these enterprises. Through the gathering of multi-source data that come from the tax sub-system, we can construct a tax knowledge graph which takes taxpayers as its center. The bottom data is kept through Neo4j [20] and Janusgraph graph-type data bases. The original data carries on the procedure of drawing out relationships and node attributes with the assistance of Spark big data processing implements. Furthermore,

the queries of graph visualization can be implemented through utilization of visualization libraries.

Figure 4 has depicted the construction process of the taxpayer knowledge graph and its service system structure.

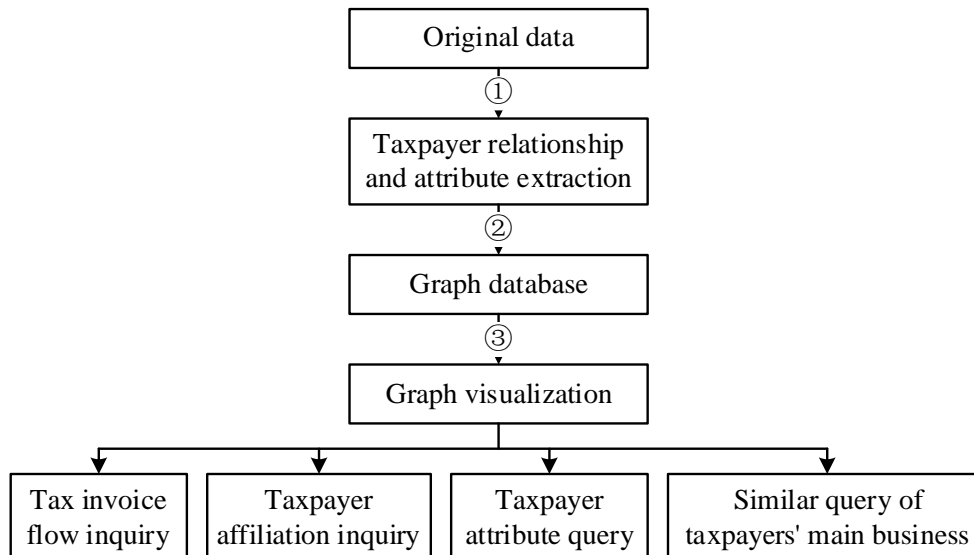


Figure 4: Construction of Taxpayer Knowledge Graph and Service Architecture

Explanation of each identifier in the flowchart:

- ① Use Spark to extract taxpayer relationships and attributes from invoice data.
- ② Use a batch import tool to import the extracted structured data into the graph database.
- ③ Use the Linkurious visualization library to visually display query results.

4 Application Outcomes of the Tax Digital Management System

4.1 Classification Performance of Trading Behavior

In this chapter, the experimental simulated work adopts datasets that have relation to transaction behavior and sample feature data. These data are got from the invoices which were issued in Province A of China in the year 2022. The Province A is one region which lies beside the sea, it holds a population that more than 50 million people. In this province, the number of enterprises that have completed registration is more than 7 million, and the invoice data which has been collected contains 20,121,341 records. Figure 5 displays the confusion matrix which is got from the simulation experiments that were done on the dataset through using the composite coding classifier that is developed in this paper. The iteration count was set to 400. The ten transaction behaviors, numbered 1-10, are: goods sales, service provision, intangible asset transfers, real estate sales and leasing, financial commodity transactions, asset restructuring and equity investments, payment of salaries and labor remuneration, import of goods, export of goods, and non-taxable activities. The average accuracy rate for transaction behavior recognition achieved by the proposed classifier reached 98%.

Bayesian classification, K-Nearest Neighbors (KNN), and Support Vector Machine (SVM) classification methods were applied to classify the ten transaction types in the dataset. Their recognition results were compared with those of the proposed composite coding classifier. The

confusion matrices for the three comparison methods are shown in Figures 6-8, achieving maximum recognition rates of 86%, 90%, and 94%, respectively. Comparing the recognition performance of the three methods with the proposed classifier, the combination-coded classifier further enhances the model's recognition capability. Simulation experiments using the proposed transaction behavior classification coding model based on tax invoice data achieve the highest recognition accuracy for transaction behaviors.

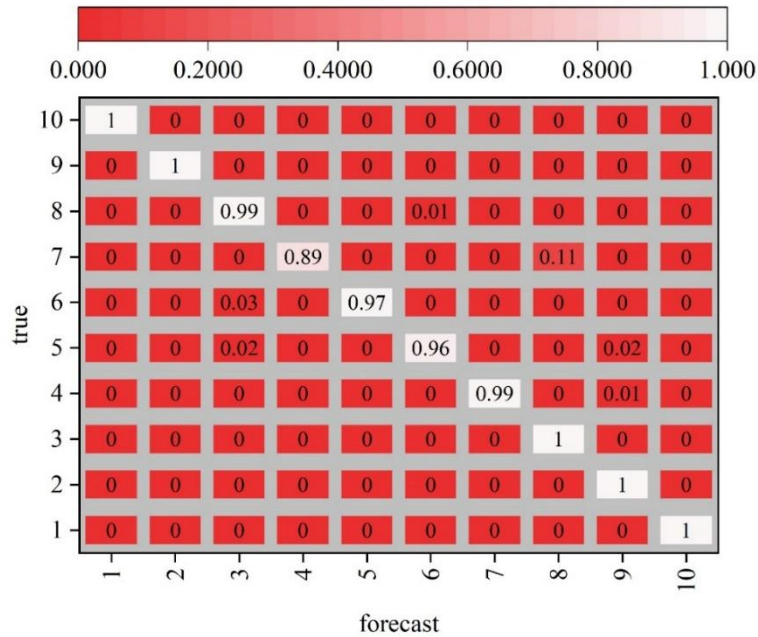


Figure 5: The confusion matrix of the classifier in this article

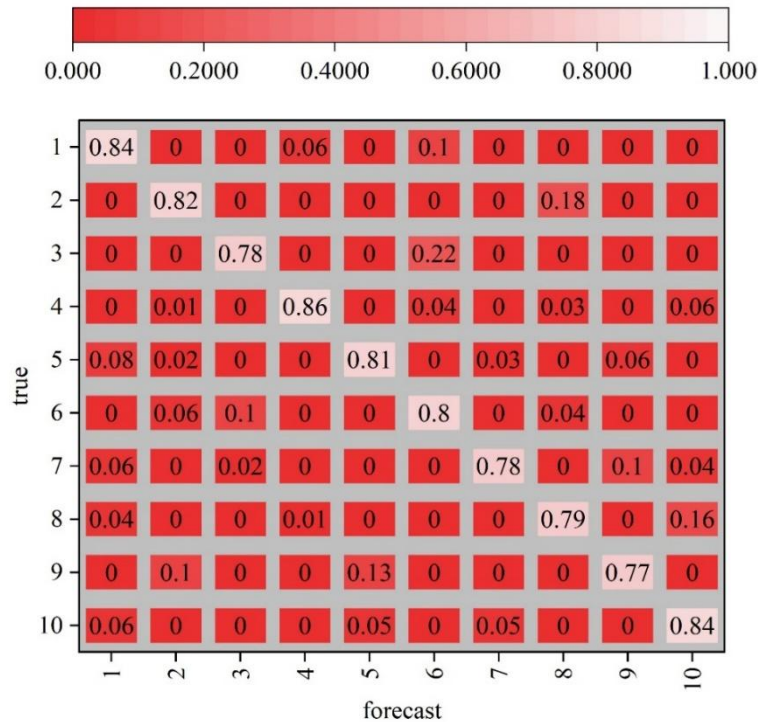


Figure 6: The confusion matrix of the bees classifier

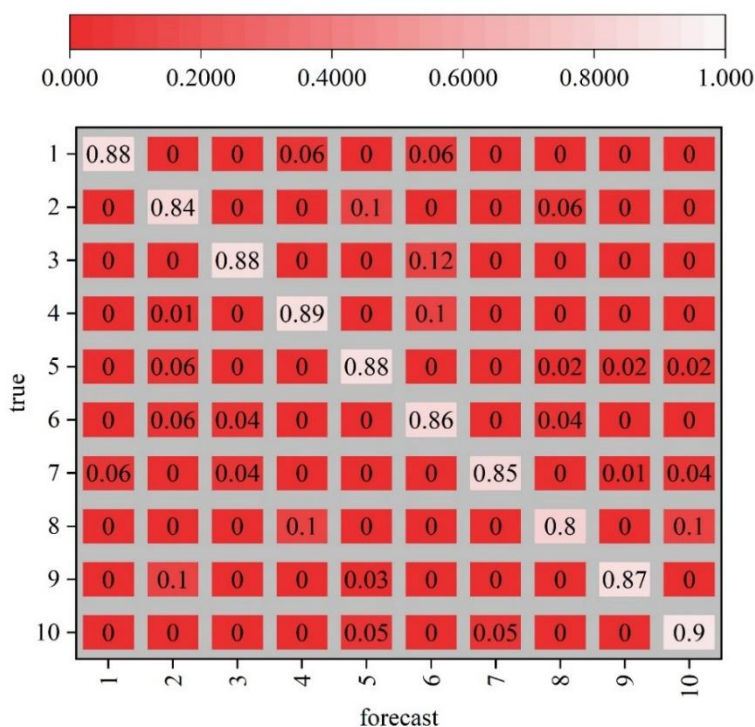


Figure 7: The confusion matrix of the k neighbor classification method

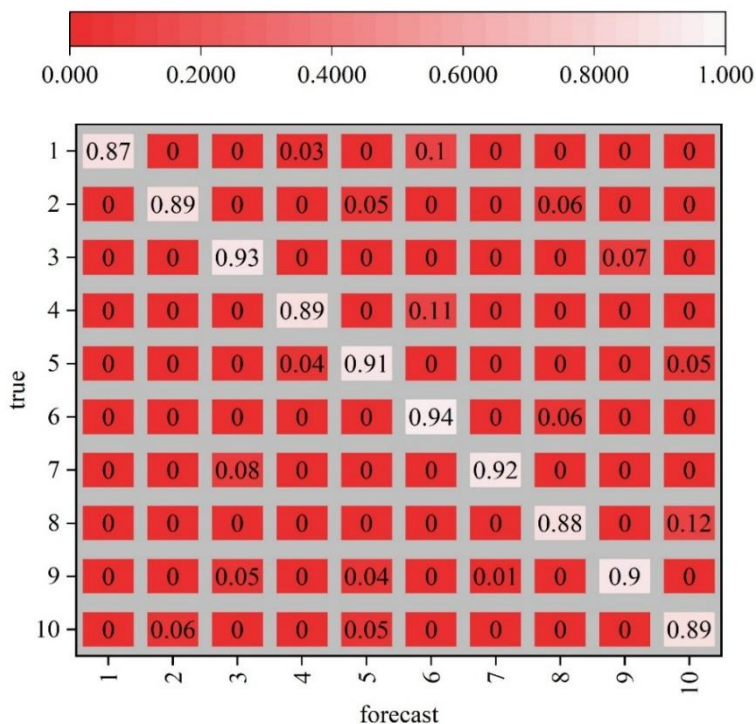


Figure 8: The confusion matrix of the support vector machine

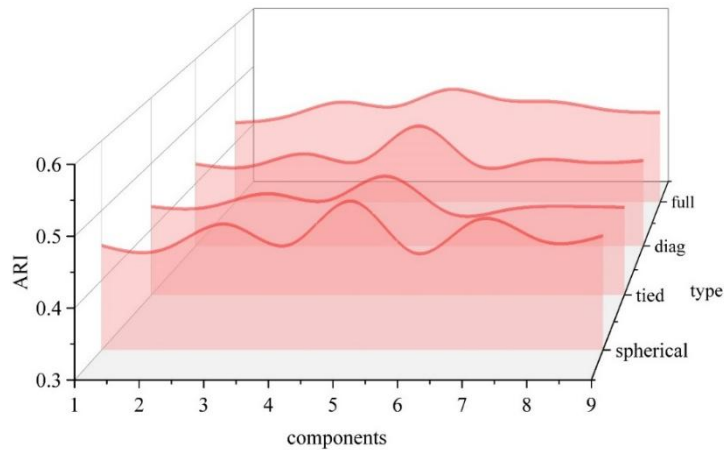
4.2 Stability of High-Concurrency Transaction Behavior Code Queries

Model stability is a key dimension requiring careful consideration in this paper when encoding queries for high-concurrency transaction behavior. To obtain a more comprehensive performance estimate, the algorithm model must be tested k times using different random seeds

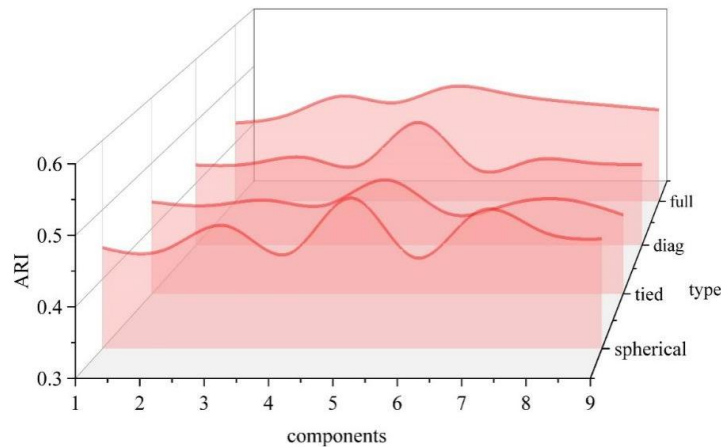
to partition the training and test sets, with the average performance across k tests calculated. This method, known as Monte Carlo cross-validation, provides a better estimate of the model's performance on randomly selected test sets compared to conventional holdout validation methods, while also demonstrating model stability.

The experimental method includes that we use one algorithm to repeatedly train a model on the same data set, and utilize the ARI index to evaluate its ability of data discrimination. This method in the final analysis is equal to splitting the training set and the test set by using different random seeds. When the ARI score shows big change between each iteration, or the best cluster size has obvious shake, hence this indicates the algorithm model possesses low stability when it finds abnormal transactions, therefore thus its application ought to be rejected. The results of many tests about model stability are shown in Figure 9, in which Figures (a) to (c) separately describe the outcomes of Tests 1 to 3.

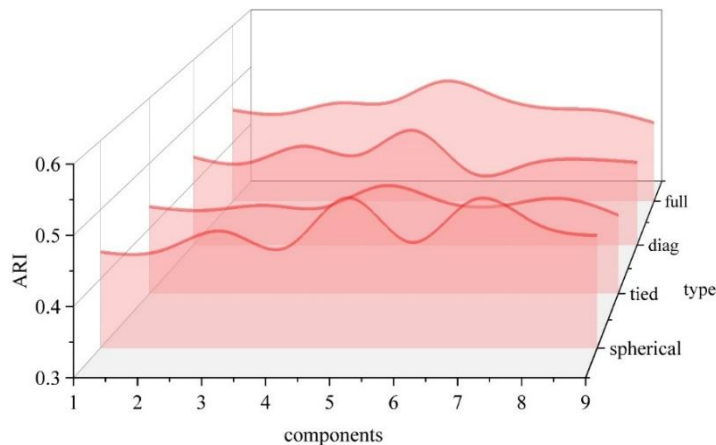
In the system that encodes and queries high-concurrency transaction behaviors, the scores of Adjusted Rand Index (ARI) have kept stable. The best group did not have change, and it hence always appeared at the fifth component. In the process of very many experiments, the model has displayed extremely little variation. The undulations of the ARI scores were inside the scope of 0.4 to 0.6, hence the best ARI numerical value kept unchanged. Therefore, this high-concurrency transaction behavior encoding inquiry system is very suitable for being implemented in transaction behavior inquiry service items.



(a) Experiment 1



(b) Experiment 2



(c) Experiment 3

Figure 9: Model stability experimental results

4.3 Industry Geographic Distribution Analysis

Cities act as the centers for a very large number of economy-related doings. Big enterprise groups collect in different places on basis of market strength and resource supply situations, hence bringing about special geographic distribution features that only belong to each individual industry. In the present chapter, Province A is taken by us as the research object. Through the utilization of tax invoice materials, we have the ability to conduct an all-sided inspection of the economic structures that exist in assorted industries. Therefore, owing to the influence that market competition mechanisms bring, the spatial distribution arrangements of big enterprise groups are the most direct spatial reflections of their location choices. This research carries out deep discussion on the spatial distribution rules of the security, insurance and bank industry fields. The outcome points out that many different trades show special space gathering characteristics. In the meantime, a certain degree of "mismatch" exists among the spatial distribution directions of different industries, therefore it causes various regional distribution patterns. This can prove that different industries have different demands on position elements, and thus also reflects the change tendency of function regions inside cities. Just like what is shown in Figure 10:

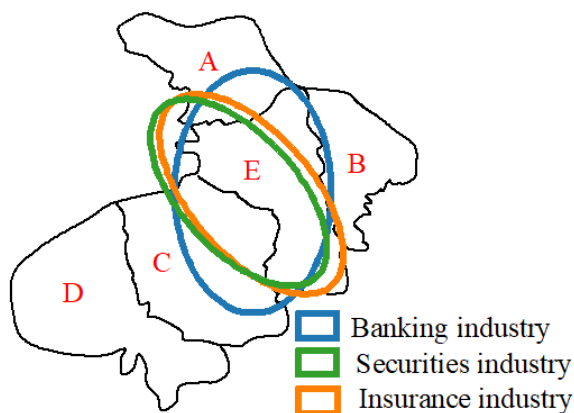


Figure 10: Industry standard deviation ellipse

4.4 Visual Analysis of Tax Knowledge Graphs

The analysis on tax knowledge graph can discover the complicated systems and networks which are the foundation of large-scale enterprise operation activities. It is a practical and extremely credible method on data modeling and analysis. In this article, the analysis about the tax knowledge graph enables the corporate connection network for the concentrated tax supervision of big corporate groups.

The taxation knowledge graph provides a visualized expression of the connections among taxpayers within business enterprises. For example, when we make observation on Company X which is situated in Province A, a search for its beneficial ownership can get the outcomes which are presented in Figure 11.

Node points stand for objective entities, for example business units, common single persons, and family interior members. At the same time, edges express the connections between these entities, it includes stockholder relationships (drawn by orange color), director posts (in red color), manager positions (in light red color), and related connections (in dark yellow). Because Company X possesses very many affiliated units, and large group supervision work has the demand for network analysis, in order to make content clear, only Companies A, B, and Y, which hold Company X's shares, get displayed at here, and all other affiliated entities are excluded. The beneficial ownership diagram reveals all the entities and individuals which hold beneficial interests inside the company. This makes users be able to make fully informed choices on the work of tax management according to the ownership structure.

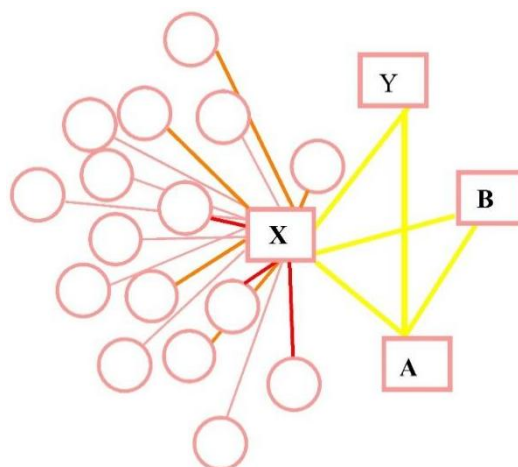


Figure 11: X enterprise tax knowledge map

5 Application Strategies of Digital Management Systems in Tax Planning

5.1 Improve the tax management and planning system

The fast development of big-data technology brings new opportunities and challenges to enterprise tax management and planning. Enterprises ought to carry out an overall evaluation of the use demands of big-data technology and therefore constantly optimize their tax management and planning frameworks in accordance with actual reality situations. At first, business units ought to make use of big-data technique to simplify and promote tax handling working flows. Through the putting of information technology into these works, unnecessary approval steps and artificial operations can be eliminated. Under the support of digital tax

administration platforms, tax declaration documents can be produced and analyzed automatically, thus accurately describing the current situation of our company's tax management and planning work.

5.2 Promoting the Digitalization of Tax Administration and Planning

Build a connected and useful digital tax management framework that uses big-volume data, cloud computing, and artificial intelligence functions to reinforce the link between tax management work and strategic tax arrangement. This method has the objective of promoting the overall level of enterprise tax management and scheme arrangement. First of all, enterprises ought to consummate the high-level design of their tax management and planning information infrastructure. This thing includes accurately putting forward clear objectives, action roads, and execution methods. For instance, the objectives may include raising the transparent degree of tax management working procedures, helping real-time supervision of tax-connected data, and cutting possible tax-connected risks.

5.3 Establish Tax Information Sharing and Coordination Mechanisms

In the epoch of digital economy, business entities ought to accelerate the construction of tax information sharing and collaboration mechanisms to counteract the negative influences of inner information unbalance upon enterprise tax management and planning. First of all, companies ought to delineate the objectives of tax information sharing policies and procedures. They need to work out systems for tax information sharing and cooperation which include data collection, analysis, utilization, and spreading. These systems can make the work arrangements of the financial and tax personnel become standardized and give direction to them.

6 Conclusion

This research article designs a digital tax management system which is based on neural networks, and it inspects its suitability for tax planning inside large enterprise groups.

We have developed one coding model for classification of transaction behaviors, which it integrates an attention mechanism to link tax transactions and tax classification codes. When we carry out comparison experiments to compare with Bayesian classifiers, K-Nearest Neighbors (KNN), and Support Vector Machines (SVM), the result is that this model has obtained the average transaction recognition accuracy which is 98%. This in an effective way solves the weak points of artificial tax management and enhances the efficiency of tax management work.

In the process of validation, the coding inquiry system for high-concurrency transaction behaviors displayed obvious stability, hence only having small undulations in the ARI score. The analysis method for industry-region distribution has dug into multi-source taxpayer data, therefore it enables a deep exploration and visual exhibition of the tax-related connections of X Corporation. This provides all-sided and direct data help and a foundation for policy decision in tax arrangement for group business entities.

According to these outcomes, this paper brings forward specific application tactics from two angles of business management and tax administration. Beside the optimization of digital tax management systems, this paper therefore puts forward the recommendation that tax information sharing and cooperation mechanisms shall be established. This can ensure that the degree of matching between systems and policies is very high, therefore it promotes the competitive ability and potential of sustainable development of big enterprise groups.

About the Author

Jie Li, born in December 1989, Yanling, Henan Province, Xuchang Ceramic Vocational College, intermediate. Research direction: Financial management and financial analysis.

References

- [1] Bird, R. M. (2015). Improving tax administration in developing countries. *Journal of tax administration*, 1(1), 23-45.
- [2] Belahouaoui, R., & Attak, E. H. (2024). Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior—a systematic literature review using textometry (2016–2023). *Accounting Research Journal*, 37(2), 172-191.
- [3] Dhaliwal, S. B., Sohail, D., Keeley Hafer, S. A., & Hafer, B. (2023). Digitalization of tax administration: A review of the organization for economic co-operation and development (OECD) guidelines. *Accounting & Taxation*, 15(1).
- [4] Ferdiana, R., & Sulistyono, S. (2019). The role of information technology usage on startup financial management and taxation. *Procedia Computer Science*, 161, 1308-1315.
- [5] Li, Z., & Wang, L. (2025, April). Research on Financial Management and Control Innovation in the Integration of Industry Finance and Taxation Empowered by Digital Intelligence Technology: --New Scenarios and Grouping Paths for Dynamic Capability Theory. In *Proceedings of the 2025 International Conference on Digital Economy and Information Systems* (pp. 39-47).
- [6] Shukla, S., Bisht, K., Tiwari, K., & Bashir, S. (2023). Data Monetization. In *Data Economy in the Digital Age* (pp. 37-62). Singapore: Springer Nature Singapore.
- [7] Bataineh, A. S., Bentahar, J., Mizouni, R., Wahab, O. A., Rjoub, G., & El Barachi, M. (2021). Cloud computing as a platform for monetizing data services: A two-sided game business model. *IEEE Transactions on Network and Service Management*, 19(2), 1336-1350.
- [8] He, Y., & Yi, Y. (2023). Digitalization of tax administration and corporate performance: Evidence from China. *International Review of Financial Analysis*, 90, 102859.
- [9] Shelomentsev, A., Chuzhmarova, S., Chuzhmarov, A., & Chuzhmarova, A. (2020, January). Functional Aspects of the Development of State Tax Management in the Digital Economy. In *Ecological-Socio-Economic Systems: Models of Competition and Cooperation (ESES 2019)* (pp. 189-192). Atlantis Press.
- [10] Zhao, Q., & Wang, W. (2025). Tax digitization and earnings management. *International Review of Economics & Finance*, 104077.
- [11] Al-Rubaye, M. H. A., & Al-Ta'ib, A. H. K. (2023). The Impact of Digital Knowledge Management on Tax Compliance Efficiency: An Empirical Study of the General Tax Authority. *Tikrit Journal of Administrative and Economic Sciences*, 19(62), 434-455.

- [12] Deshi, N. N., Ibilbor, A. E., & Paul, A. Y. (2025). Effect of digital tax reforms on tax administrative efficiency of the Nigerian Federal Inland Revenue Service. *ISA Journal of Business, Economics and Management (ISAJBEM)*, 2(3), 265-278.
- [13] Cheng, Q., Chen, B., & Luo, J. (2024). The impact of digital tax administration on local government debt: Based on the revision of the tax collection and administration law. *Finance Research Letters*, 67, 105938.
- [14] Salahova, S. (2025). Criteria for Assessing the Effectiveness of Digital Tax Administration. *Accounting & Finance/Oblik i Finansi*, 108(2).
- [15] Ibilbor, A. E., & Deshi, N. N. (2025). Effectiveness of Digital Tax Reforms on Administrative Efficiency of The Nigerian Federal Inland Revenue Service: With Tax-Promax Inclusion. *Journal of Economics, Business, and Commerce*, 2(1), 229-244.
- [16] Mpofu, F. Y. (2024). Digital transformation by tax authorities. In *Digital Transformation in South Africa: Perspectives from an Emerging Economy* (pp. 151-170). Cham: Springer Nature Switzerland.
- [17] Oussama Tahtah, Ahmed Zinedine & Khalid Fardousse. (2025). Arabic Legal Question Classification Using Deep Learning and Adapted Word Embedding. *Operations Research Forum*, 6(3), 112-112.
- [18] Rajesh Sharma R, Muluken Ayele Alemu, Nune Sreenivas, Akey Sungheetha & Sheila Mahapatra. (2025). Cyberbullying Recognition on social media for an Afro-Asiatic language Content Using Attention Mechanism and Bi-RNN Classifier. *Procedia Computer Science*, 258, 2232-2243.
- [19] Rayan Alhaddad, Hongki Jo & Jong Hyun Jeong. (2025). Impact load identification by training a convolutional neural network (CNN) with physics-based simulator under uncertainty. *Advances in Structural Engineering*, 28(12), 2180-2203.
- [20] Keping Zhou, Xiaohui Lu, Chun Yang, Zhiqing Chen, Wei Liu & Haiwen Yan. (2025). Architecture and Application of Mine Ventilation System Safety Knowledge Graph Based on Neo4j. *Sustainability*, 17(7), 3209-3209.