



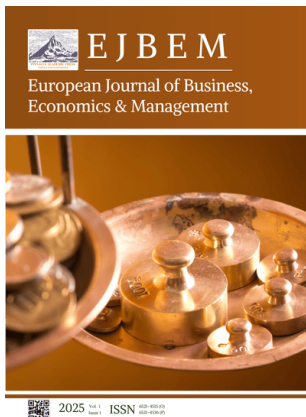
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# The Impact of Financial Data Automation on the Improvement of Internal Control Quality in Enterprises

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**Abstract:** The development and progress of information technology have gradually enabled the automated management of financial data, and more and more people believe that this is a method to optimize the internal control of enterprise management. The main content of this paper is to improve the internal control of enterprises and its subsequent effects through the automation of financial data. An in-depth investigation and elaboration were conducted on accounting calculation, budget preparation, tax compliance and intelligent financial analysis, etc. It was emphasized that the automation of financial data makes financial data more accurate and consistent, and enhances the transparency and timeliness of financial statements. In addition, the automation of financial data enhances tax compliance management, reduces legal risks, and provides enterprises with more efficient financial governance guidance.

**Keywords:** enterprise internal control; quality improvement; information technology

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## 1. Introduction

Facing the rapid development of information technology, enterprises are confronted with more complex financial management problems. The traditional financial management methods are operated manually, which is prone to problems such as data errors and compliance, thus having a negative impact on the company's own internal control level. Using intelligent technology to replace human labor in calculating financial data can timely summarize and organize the data, accurately submit information and control risks. This is an important means to improve the internal control level of the company. This approach can effectively enhance the efficiency and accuracy of accounting calculations. It can also provide references for decision-making through the analysis of real-time data, improving the transparency and compliance of finance. This method is widely applied in tax payment, budget formulation, and financial evaluation, etc., and can promote the internal control system to be more scientific and effective.

## 2. The Importance of Improving the Quality of Internal Control in Enterprises

### 2.1. Strengthen the Level of Enterprise Governance

The improvement of enterprise internal control quality management affects the enhancement of the company's operational capacity. A complete enterprise internal control system can ensure that all business operations are conducted within the legal scope and also guarantee the transparency and authenticity of information. Relying on a sound internal control management concept, enterprises can make their internal control orderly,

thereby ensuring a reasonable allocation, curbing the abuse of power by senior management, and reducing the probability of occurrence of violations such as moral hazard and financial fraud. Secondly, enterprise internal control can promote the improvement of the company's operational and governance capabilities, thereby enhancing the company's ability to face external supervision and ensuring that the company operates in accordance with the legal articles of association. Especially in the context of increasingly strict laws and regulations and the increasingly strict external supervision system faced by the company, a complete enterprise internal control system prompts the company to establish correct social responsibilities. Gain more support from investors and the public [1].

## 2.2. Improve Operational Efficiency

A sound and complete internal control system is closely related to the operational efficiency of an enterprise. Efficient internal control is conducive to reducing unnecessary cumbersome links, ineffective labor and useless operations, thereby enabling the rational allocation and utilization of resources and improving work efficiency. By adopting automation technology and information technology to strengthen the internal control management of the company, the role of manual labor can be reduced, the speed and accuracy of information processing can be improved, and the lag of information processing and the occurrence of errors in information data processing can be avoided. Effective internal control facilitates effective communication and cooperation among various departments of an enterprise, reduces problems that arise during information transmission, enables senior managers to obtain accurate and detailed information, shortens the enterprise's decision-making response time, improves the accuracy of resource allocation, assists in the smooth completion of specific projects, and reduces cost waste and delay [2]. Moreover, the improved internal control of enterprises also has a strong ability to prevent and respond to crises. Enterprises can detect problems before crises occur, respond and handle them in a timely manner, and avoid the phenomenon of work termination or economic losses caused by sudden situations.

## 3. The Application of Financial Data Automation in Improving the Quality of Internal Control in Enterprises

### 3.1. Application of Automation Technology in Accounting Calculation

Implementing accounting calculations through the automation of financial data is an important way to effectively enhance the internal control level of a company. Due to the traditional manual input and accounting, it is prone to the current situation of excessive workload and high error rate of operators. However, with the help of financial data automation technology, enterprises can respectively achieve automated processing of data acquisition, classification, summary and report analysis, etc., ultimately significantly improving the accuracy rate and work efficiency of accounting. An automated accounting system can independently complete the collection and processing of various types of financial data, effectively reducing the probability of manual intervention and ensuring the standardization and completeness of financial data (see Table 1).

**Table 1.** Application of Automation Technology.

Application of Automation Technology	Description	Influence and Advantage
Automated voucher generation	Generate financial vouchers based on daily business transactions to reduce manual input and calculation.	Enhance data accuracy, reduce personnel errors, and make financial data more accurate and unified.

Automatic accounting processing	Input accounting data and information into the computer in real time to achieve the automation of account book classification, amount verification and accounting subject matching.	Improve the speed of financial accounting, reduce the accounting time, and ensure the timeliness and accuracy of accounting.
Financial statements are automatically generated	Automatically generate various financial statements, including financial analysis reports, account analysis reports, statistical analysis reports and analytical reports, etc.	To achieve real-time updates of financial statements, enhance the timeliness of financial statement preparation, increase the transparency of financial data and its support for business management decisions.
Automated account reconciliation	Use automated tools to verify bank reconciliations, receivables and payables, etc., to ensure the accuracy of financial data.	Improve the accuracy of accounting, reduce the error rate of manual accounting, and enhance the efficiency of fund control.

The automation system can also monitor and identify abnormal data in real time. It can detect abnormal data in advance and correct it promptly to prevent abnormal or illegal and non-compliant behaviors, thereby improving the internal management quality of the company.

By leveraging an integrated financial data system, enterprises can overcome the drawbacks of data segmentation, ensure the uniformity, openness and transparency of all financial data within the enterprise, and enhance the decision-making confidence of enterprise managers [3].

### 3.2. Automated Budgeting and Financial Forecasting

Adopting automated technology for budget preparation is also one of the key measures to enhance the operational efficiency of finance, which can effectively improve the scientificity and rationality of the budget plan. In the traditional manual operation mode, financial personnel can only enter each piece of data one by one and make modifications and checks, which is very likely to cause human errors and information lag problems. With the help of financial data automation, massive historical data information and real-time data information can be processed quickly. Through precise analysis of these data, the economic situation of the enterprise can be predicted more accurately, and on this basis, more effective support can be provided for the formulation of budget plans. By managing the automated budget arrangement, it is also possible to automatically prepare the initial budget plan based on the enterprise's past performance and market development trends. Moreover, it can conduct a more in-depth analysis of these data from various perspectives and provide advance warning prompts for possible problems that may arise during the budget execution.

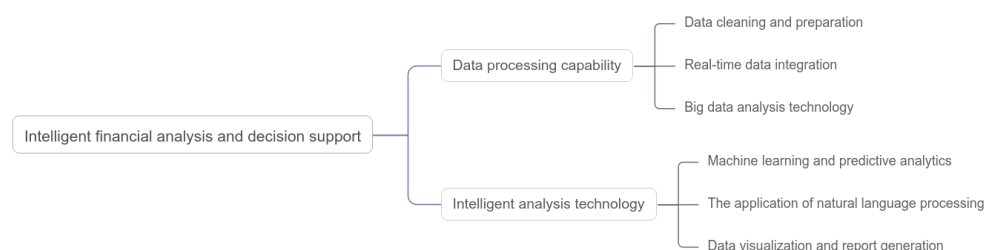
### 3.3. Tax Compliance and Automatic Report Generation

Tax compliance is a necessary link in the operation of a company. To meet the company's tax compliance requirements, it is necessary to enhance the level of automated use of financial data. The implementation of traditional tax compliance is generally done manually, which is time-consuming, labor-intensive and prone to errors. It also requires staff to have highly professional knowledge, experience and practical skills. Human factors may lead to incorrect tax declaration and tax risks. Introducing intelligent technology into the work of tax compliance can effectively assist tax staff in completing their tasks, and it can enhance the efficiency and accuracy of tax compliance [4]. An automated system for tax compliance can immediately receive the company's financial data and independently calculate and establish tax forms based on the tax policies of various countries. It is also

possible to change the format and calculation method of tax forms in each country and region based on the different needs of its tax laws to meet local legal requirements and reduce the difficulty of tax compliance. In addition, the automated tax compliance system can also conduct real-time detection and early warning, generate early warnings of tax compliance in real-time data, and provide prompts.

### 3.4. Intelligent Financial Analysis and Decision Support

Intelligent financial analysis and decision support is based on the automatic application of financial data. It is a complex application system that applies efficient processing technologies and intelligent data analysis methods of financial data to the management decisions of enterprises, which helps enterprises make more accurate decisions. (See Figure 1).



**Figure 1.** Intelligent Financial Analysis and Decision Support.

Traditional financial analysis often requires manual summarization and report generation, which can lead to lagging analysis, resulting in untimely information and inaccurate data. Under the operation of the automatic analysis function of the automated financial analysis system, financial analysts analyze a large amount of data to ensure the timeliness and accuracy of the analysis data, provide the timeliness and accuracy of the analysis conclusions, accelerate the process of enterprise decision-making and improve the quality of decision-making. The automatic financial analysis system based on big data technology and machine learning technology can comprehensively and thoroughly analyze the financial data of enterprises, such as the analysis of the financial status of enterprises, the analysis of enterprise cash flow, and the analysis of enterprise income sources, etc., providing multi-level enterprise operation analysis reports for management. The management can understand the general operation of the enterprise through the conclusions of financial analysis, predict the future development trend of the enterprise's finance, analyze the hidden problems and opportunities, etc., and plan the corresponding financing plans in advance, or help the enterprise's business decision-makers reduce the enterprise's costs through cost expenditure analysis of the enterprise's expenditure structure, etc., and thereby enhance the enterprise's profitability [5].

## 4. The Impact of Financial Data Automation on the Quality of Internal Control in Enterprises

### 4.1. Enhance the Accuracy and Consistency of Financial Data

The automation of financial data has a significant effect on improving the accuracy and consistency of enterprise financial data. In traditional enterprise management, many financial work links cannot do without manual labor. It is very easy to have problems such as inaccurate data entry, different formats and lagging financial statement information, which have a negative impact on improving the quality of financial statements and the accuracy of decision-making. Financial data automation can be achieved through an integrated system to automatically collect, process and analyze financial data, minimizing human errors and ensuring data unification. The implementation of financial data automation enables the staff of the finance department to avoid the manual input and

modification of data. With the help of automated tools, they can automatically complete the real-time verification and correction of data and eliminate inaccuracies. Meanwhile, enterprises can achieve the functions of automatic data update and inspection in the financial data automation system, ensuring the uniformity of financial data, avoiding the situation of data silos among various business departments, and also ensuring the accuracy of financial statements.

#### 4.2. Enhance the Transparency and Timeliness of Financial Reports

The automation of financial data has further enhanced the openness and timeliness of financial data. Under the traditional model, financial data is obtained through manual summarization, accounting and production, which is prone to omissions, redundantly calculations and errors, and requires a huge time cost. By adopting automation technology, data information can be collected and organized instantly, and financial tables can be generated instantaneously to ensure the accuracy and completeness of the form data. In addition, this kind of automated data can also update data information in a timely manner, providing effective data assistance to managers. It also combines financial data with business data to form a more transparent and comprehensive financial perspective. It not only improves the efficiency of generating reports and reduces human errors, but also enhances the transparency of financial reports, helping internal managers of enterprises and relevant external interest groups to understand the financial situation of enterprises more accurately. (See Table 2).

**Table 2.** Application of Financial Data Automation.

Applica- tion field	Traditional method	Application of Auto- mation Technology	Influence and Advantage
Data col- lection and or- ganization	The on-site manual collection and organization of data is very cumbersome, and there may also be omissions and errors.	The automatic control system can collect and process data information in real time, which can avoid the intervention of human factors.	Ensure the accuracy and completeness of data, reduce personnel errors, and ensure the openness of financial reports.
Genera- tion of fi- nancial re- ports	The reports produced by calculating and summarizing the data manually will take time	The automated system can generate many financial and accounting reports immediately and quickly	Improve the efficiency of report generation, shorten the report generation cycle, and enhance the timeliness of reports.
Report ac- curacy	Due to the existence of underreporting, incorrect reporting and duplicate reporting in the data summarized by humans.	The input data can be automatically checked, corrected and other methods to achieve accurate and error-free automatic reporting.	Ensure the authenticity of financial reports and avoid subjective errors that may lead to discrepancies between accounts and actual figures.
Real-time data sup- port	Traditional reports are outdated information and data, without measurable actual situations.	Generate and update financial statements and provide current management and operation information.	Provide accurate accounting information to managers in real time and promptly, enabling them to make relevant decisions in a timely manner.
Cross-de- part- mental	The data of each department is fragmented, and thus the	Be able to organically integrate financial data, all-round market, production	Providing the management with all-round and transparent financial report charts makes it more



data integration	report lacks an overall perspective.	and sales information to form a multi-faceted perspective	convenient for them to grasp the operation and development of the enterprise.
Report transparency	Due to human factors, there are inconsistencies in the data, and the reports are biased or incomplete.	Achieve the consistency of data and reports, as well as their visibility, through financial automation management	Enhance the transparency of financial reports to enable the managers of enterprises and their relevant department personnel to have a clearer understanding of the financial situation of the enterprises.

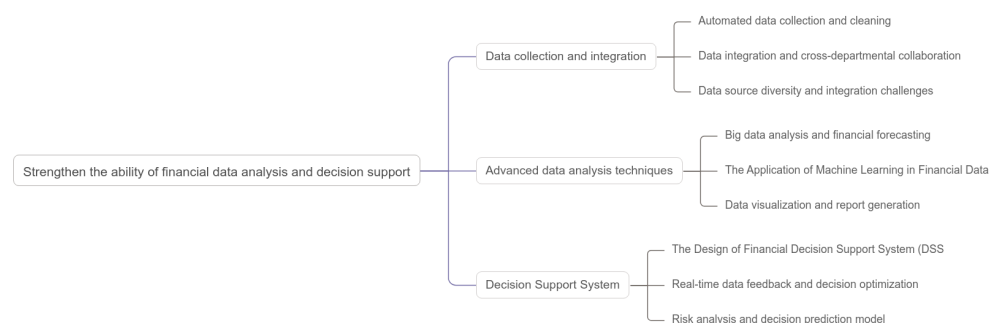
This table demonstrates the application of automation in financial data analysis in the transparency and timeliness of financial reports and shows advantages over the traditional manual approach.

#### 4.3. Optimize Tax Compliance and Reduce Compliance Risks

As for tax compliance, improving the automation of financial data can help avoid its risk issues. The traditional manual processing mode often leads to errors and neglects important information, posing a risk of tax violations. With the help of automated tools, the data content required for tax forms can be automatically processed, ensuring the accuracy of the reports and compliance with the law, and avoiding compliance risks caused by human errors. This automated tax software can automatically construct tax returns based on real-time financial data and also automatically adjust the content and structure of tax forms in accordance with the legal provisions of each country and region. This automated tool also has a real-time supervision of tax compliance, which can identify existing issues and automatically capture changes in tax rates, shifts in preferential policies, and other contents, thereby modifying the company's tax accounting methods and declaration strategies. Such real-time monitoring helps prevent tax investigation risks caused by negligence, and at the same time improves the efficiency of tax management, saving the company's time and energy.

#### 4.4. Enhance the Ability of Financial Data Analysis and Decision Support

The key contents of enhancing financial data analysis and decision support work include the following. First, the problem of data cleaning and integration has been solved through automation technology and cross-departmental collaboration. Second, through data analysis techniques such as big data analysis, machine learning and data visualization, the ability to provide timely and accurate financial data is enhanced. Finally, in the construction and operation of the DSS system, the application of feedback and risk analysis models based on real-time data helps managers make more scientific and efficient decisions. (See Figure 2).



**Figure 2.** Financial Data Analysis Capability and Decision Support.

Through these measures, the ability of financial data analysis has been significantly enhanced, fully exerting its role in serving business decisions.

## 5. Conclusion

The automation of financial data plays a decisive role in the quality of a company's internal control. By means of automated financial data, the company's financial information can be made accurate and standardized, the transparency of the company's financial statements can be enhanced, the company's tax compliance can be optimized, and at the same time, the company's capabilities in financial statement analysis and decision support can be strengthened. Improve the financial operation efficiency of the company, strengthen the internal control mechanism of the company at the same time, and reduce the error of human factors in the internal control of the company's finance. With the continuous development of technology, the automation of financial data will continue to promote the innovation and transformation of the company's financial operation and management, and facilitate the company's informatization construction.

## References

1. W. Chen, "An enterprise financial data risk prediction model based on entropy weight method," *Int. J. Ind. Syst. Eng.*, vol. 45, no. 1, pp. 89-100, 2023, doi: 10.1504/IJISE.2023.133533.
2. H. B. S. Nunkoo, P. N. Gonpot, N.-U. Sookia, and T. V. Ramanathan, "Autoregressive conditional duration models for high frequency financial data: an empirical study on mid cap exchange traded funds," *Stud. Econ. Finance*, vol. 39, no. 1, pp. 150-173, 2022, doi: 10.1108/SEF-04-2021-0146.
3. O. M. Ali et al., "Enhancing data analysis and automation: integrating Python with Microsoft Excel for non-programmers," *J. Softw. Eng. Appl.*, vol. 17, no. 6, pp. 530-540, 2024, doi: 10.4236/jsea.2024.176030.
4. I. A. Sikarev, T. V. Vekshina, V. A. Bol'shakov et al., "Current trends in methods of the efficient automation of data processing," *Autom. Control Comput. Sci.*, vol. 57, pp. 875-880, 2023, doi: 10.3103/S014641162308031X.
5. S. Zwaal and A. Hammad, "Medication management in general surgical patients made nil by mouth perioperatively: a quality improvement study," *J. Perioper. Pract.*, vol. 34, no. 10, pp. 296-301, 2023, doi: 10.1177/17504589231211442.

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