Problems and Countermeasures of Enterprise Financial Statement Analysis under the Background of Intelligent Finance

Jincen Han[1,a,*]

[1]*Nanchong Vocational and Technical College, Nanchong, Sichuan, China*
[a]*595670113@qq.com*
[*]*Corresponding author*

Keywords: Smart Finance, Corporate Finance, Financial Statements, Problem Solving

Abstract: With the rapid development of economic globalization and the intensification of market competition, business leaders need to adopt new information technology so that small and medium-sized enterprises can survive and grow in the fierce competition. It Uses Internet communication and information technology, as well as related technologies and theories, to create an information system that can integrate internal and external environments and exchange various types of business information, apply advanced technology to reduce costs, improve business efficiency and business competition. Based on the background of intelligent finance, this paper studies the financial statements of enterprises. This paper selects a real estate company for research and evaluates the material error risk of the company's financial statements. According to the relevant formula of the weight, the risk evaluation of the report analysis is obtained. The risk evaluation of the report layer is 13.27% for high level, 31.25% for high level, 37.64% for medium level, 10.28% for low level and 6.13% for low level.

1. Introduction

Auditing plays an increasingly important role in building the socialist market economy. With rapid social and economic development, the content and scope of monitoring work are evolving, leading to potential false positives. Financial statements are vital for tax authorities to assess taxpayers, uncovering many income tax violations through data analysis.

As business progresses, loopholes in auditing standards emerge. Researching the link between material misstatement risk and audit fees enriches modern risk-oriented auditing theory and guides practice. This paper innovatively studies corporate financial statement misstatement risks in the intelligent finance context. It proposes three stages: building an intelligent information system, using terminals for data collection, and analyzing data. Using a listed company as an example, it identifies two factors influencing misstatement risk and suggests countermeasures.

2. Related Work

Regarding smart finance, relevant scientists have conducted the following research. Lehmann EE

analyzed how smart finance fosters smart growth in urban areas, using the European Commission's smart growth framework. This study, based on German metropolitan areas, highlighted the complementary effects of smart financial measures and local intelligence in fostering new business creation [1]. Donald D.C. examined "smart precision finance" for small businesses, focusing on reducing information asymmetry and transaction costs while mitigating agency risks, ultimately enhancing venture capital opportunities [2].

For corporate financial statements, researchers have made notable contributions. Shang H utilized IoT big data mining to select financial indicators, applying fuzzy clustering methods to analyze financial risks in listed companies [3]. Mita A F investigated how IFRS adoption improves financial statement comparability, indirectly increasing foreign investor ownership, though the study's scope was limited to broad IFRS adoption differences [4]. Kim J H explored IFRS adoption's impact on reported profits and tax rates, providing insights into the differences between consolidated and separate financial statements [5]. Xu W improved methods for capitalizing operating leases, demonstrating how these changes affect financial statements and key ratios, offering a refined approach for future applications [6]. Despite these advances, some studies face recognition challenges due to limited data and sample sizes.

3. Analytical Methods of Enterprise Financial Statements

3.1. Smart Finance

Smart Finance represents a new paradigm in financial management, integrating advanced tools and theories to create intelligent systems that combine software and hardware. These systems address long-standing information barriers in economics and taxation, enabling enterprises to receive comprehensive management reports. Financial practitioners must enhance their capabilities and continue researching intelligent financial systems to improve efficiency [7].
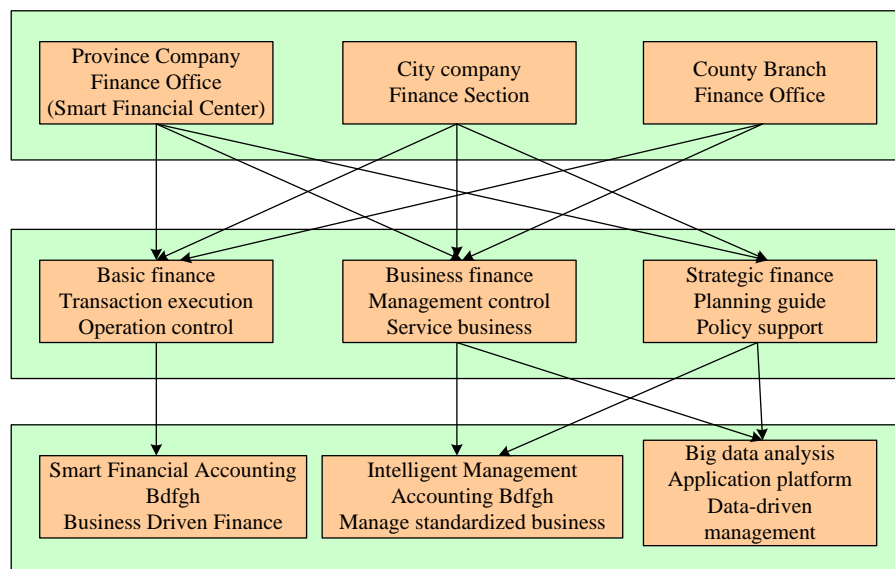

Figure 1 Smart financial model

Key advantages include:

(1) Enhanced Accuracy: Smart Finance significantly reduces errors in accounting by automating processes, notifying users of issues, and streamlining data entry. Unlike traditional methods involving manual invoice handling, modern systems ensure higher accuracy and reliability in data processing.

(2) Fraud Prevention: Professional accounting systems, with secure accounts and clear divisions of labor, effectively limit opportunities for fraud. While fraud cannot be entirely eliminated due to human oversight, strengthened data collection and system controls reduce risks, particularly for small and medium-sized enterprises [8].

(3) Decreased Demand for Accountants: By automating routine tasks, Smart Finance minimizes reliance on traditional accountants. This flexibility allows companies to address recurring financial challenges efficiently, reallocating human resources to more strategic roles and reducing the number of financial management practitioners [9].

The smart financial model is shown in Figure 1.

The unary discriminant method is the earliest quantitative financial crisis early warning model, which analyzes the company's financial status through a single variable, the univariate discriminant model is easy to operate and easy to understand, but a single financial ratio cannot fully reflect the company's operating conditions. The simple addition of several financial ratios cannot clearly determine whether the company has financial risks, and the multivariate discrimination method begins to come into people's attention [10]. Among them, the most widely used is the z-value model, and its discriminant function is:

$$z = 1.3M_1 + 1.4M_2 + 3.4M_3 + 0.6M_4 + M_5 \tag{1}$$

M_1 - working capital ratio of total assets

M_2 - total assets retained earnings ratio

M_3 - return on assets

M_4 - equity market price to debt ratio

M_5 - total asset turnover ratio

The original schema of the logistic model is:

$$L = \frac{1}{1 + e^{-u+vt}} \tag{2}$$

L - the resulting probability value

t - time mathematically transforms itself

The neighborhood of attribute set B can be defined as:

$$\omega_C(\xi_i) = \left\{ \xi_j \mid \xi_j \in U, \Delta^C(\xi_i, \xi_j) \leq \omega \right\} \tag{3}$$

The upper and lower approximations are:

$$\overline{NM} = \left\{ m_i \mid \omega(m_i) \cap M \neq \varphi, m_i \in U \right\} \tag{4}$$

$$\overline{NM} = \left\{ m_i \mid \omega(m_i) \subseteq M, m_i \in U \right\} \tag{5}$$

3.2. Financial Statements

Financial statements summarize a company's capital, profits, and losses over time, adhering to China's standardized accounting system, which mandates regular reporting, including balance sheets, special fund reports, and economic summaries for state-owned and industrial enterprises [11]. Financial statement analysis uses accounting data and techniques to evaluate company operations and financial health, helping stakeholders understand past performance, assess current

status, and make informed decisions. By transforming raw data into actionable insights, this analysis supports financial decision-making. It relies on mature diagnostic methods, including relational, comparative, and factor analysis, to identify and address financial issues effectively [12].

The development of an enterprise must go through different stages, and in these different stages, the enterprise shows a series of characteristics unique to a certain stage. Both operational risk and financial risk affect the risk of material misstatement of financial statements to varying degrees in different life cycle stages, auditors can assess the corresponding risks through life cycle stage analysis. The risks at each stage of the enterprise life cycle are shown in Table 1, and the numerical values in the table indicate the degree.

Table 1 Risks at each stage of the business life cycle

Stage	Business risk	Financial options		
		Financial risk	Financing type and proportion	Dividend policy
Lead-in period	5	1	Equity capital	0
Growth period	4	2	Equity capital(in private placement)	3
Maturity	3	3	Debt and Equity Capital	4
Recession	2	4	Debt	4

Figure 2 shows the basic logical framework for the impact of material misstatement risk on audit fees.
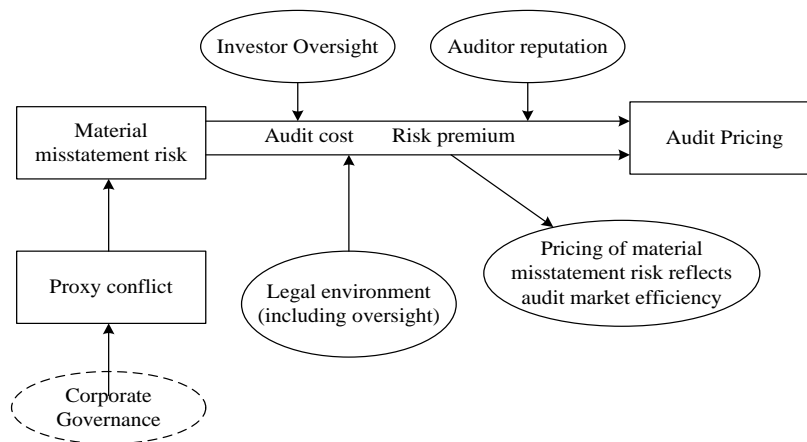

Figure 2 Basic logical framework for the impact of material misstatement risk on audit fees

Financial statements act as an intermediary for information such as a company's financial condition and results of operations. Accounting users extract information from financial statements and process it by analyzing the data to provide critical information useful for evaluating, analyzing, and making decisions about important business information. To manage tax risk, companies look for anomalies by analyzing key accounting entities and data and internal relationships observed in accounts, thereby helping companies easily reduce tax risk. Financial statements show several characteristics, such as a company's production and operations. Tax risks arising from production and operation have been included in the financial statements. The detailed analysis of financial statements is the recovery of corporate tax risk, followed by the effective management of corporate tax risk [13].

4. Experiments in the Analysis of Corporate Financial Statements

In an ever-changing market environment, companies must strive to be market leaders, not followers. The greatest advantage of business intelligence is that it provides the most accurate and up-to-date information that helps companies gain a competitive advantage. Business decision makers can assess customer usage trends, increase customer loyalty, strengthen supplier relationships, reduce financial costs, create new business opportunities, analyze future trends, develop business plans and simplify product and distribution network workflows, service procedures, etc. [14].

Financial intelligence advances financial management theory by integrating databases and high-speed computing to support data-driven decision-making. It enables rapid financial analysis and logical evaluation of indicators, improving the efficiency, accuracy, and automation of data processing compared to traditional methods [15]. As a step toward decision-oriented accounting systems, it enhances managerial insights and supports planning, forecasting, and control.

Serving as a bridge between enterprise systems like ERP, CRM, SCM, and e-commerce, financial intelligence aggregates and analyzes data from these sources. Unlike traditional systems, it identifies hidden risks and opportunities, interprets business dynamics, and evaluates behavioral impacts [16].
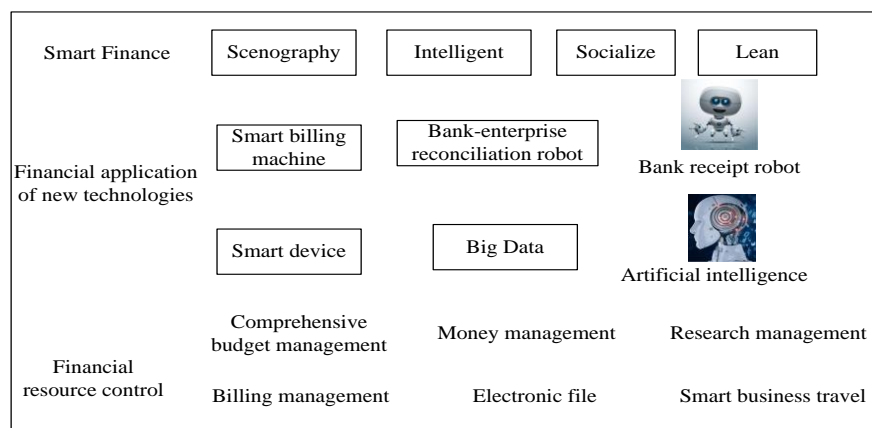

Figure 3 Schematic diagram of the composition of the intelligent system

A financial reporting system includes six key components: data sources, data warehouses, research data processing, data technology, data models, and decision-making. Inspectors provide and manage the database for analysts, handling data staging, storage, server management, online processing, and front-end tools. Once data is used, it is archived centrally. Information checklists enhance accessibility. Data scientists then process large volumes of complex program data, extracting valuable insights from ambiguous and noisy datasets [17]. These results are visualized by financial experts and passed to the CFO for decision-making. To mitigate the challenges of database development, technologies like data mining and business intelligence support analysis from specific data sources. This method—termed the "low-risk financial information approach"—enables analysis and visualization without direct data storage. Figure 3 illustrates the architecture of this financial intelligence system.

The development of intelligent finance occurs in three phases. The first phase establishes the foundational intelligent information system and platform, integrating financial standards and operational precision. The second phase expands the system using smart terminals and AI to convert and store raw data, integrating business and financial flows to improve financial management from the source. The third phase applies big data and cloud computing to analyze

earlier-stage data, enhancing hospital financial management, emphasizing value and risk control, and enabling comprehensive operational decision support.

A real estate company is used as a case study to evaluate the risk of material misstatements in its financial statements. The firm primarily engages in real estate but also diversifies into other areas. Figure 4 shows its 2021 gross profit margins across various business segments, along with trends in real estate development and sales margins over the past three years.
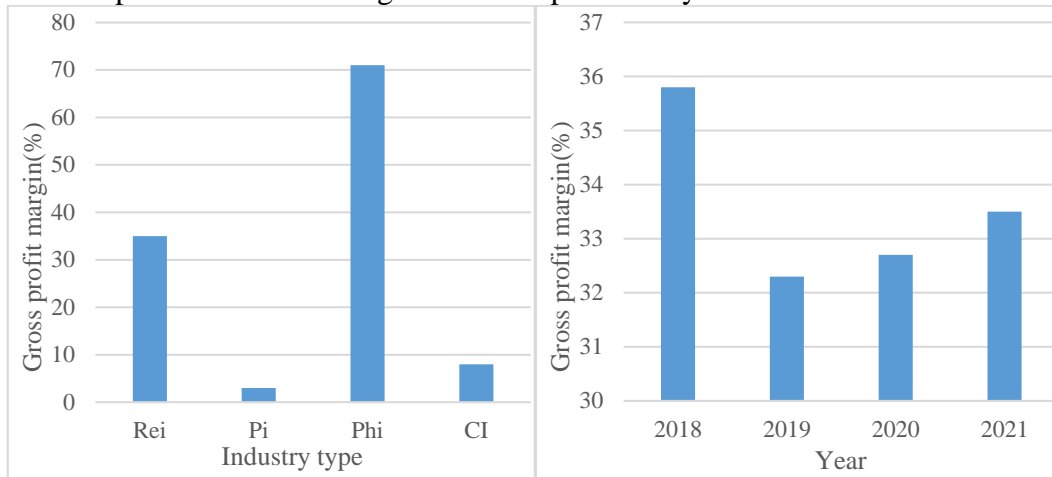

Figure 4 Gross Profit Margin Chart

Rei - Real Estate Industry
Pi-Pesticide Industry
Phi - Pharmaceutical Industry
CI - Chemical Industry

The company's development has shown strong momentum, targeting first-tier cities. As shown in Figure 5, the city distribution of the company's land acquisition in the past two years and the area of each city.
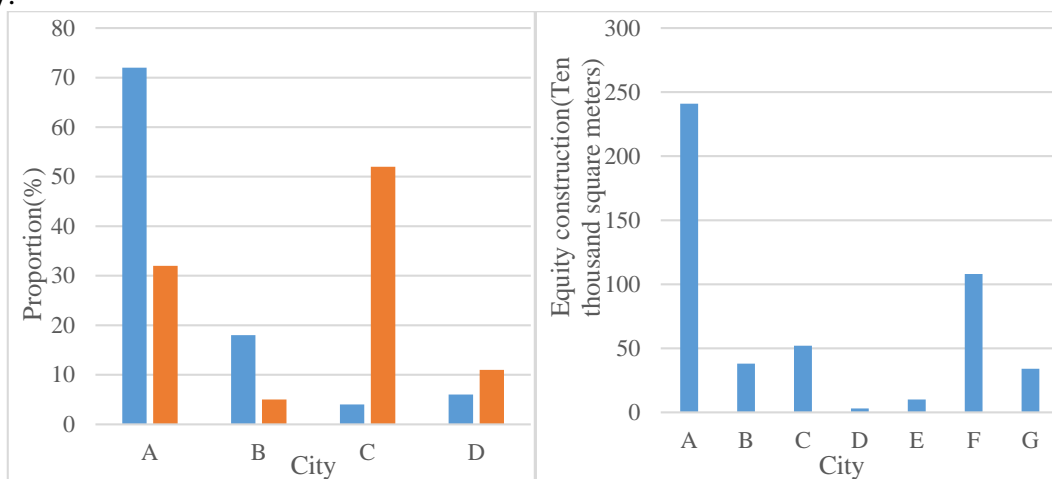

Figure 5 The distribution of land acquisition cities and the area of each city

Housing investors face numerous risk factors linked to business and management. Housing construction and commercial needs often involve multiple stakeholders, increasing the likelihood of financial misstatements. While developers have external resources with minimal raw material risks, non-commercial stakeholders rely heavily on contractors for raw material procurement, impacting costs, quality, and timelines. The high investment and extended construction periods in real estate amplify risks, with complex relationships between invoices, vouchers, and forms adding to the

challenge. Contractor management is crucial in mitigating these issues [18].

The uncertainty of material misstatement risks creates significant ambiguity in assessing risks for real estate development enterprises, as illustrated in Figures 6 and 7, which depict the risk hierarchy model [19].
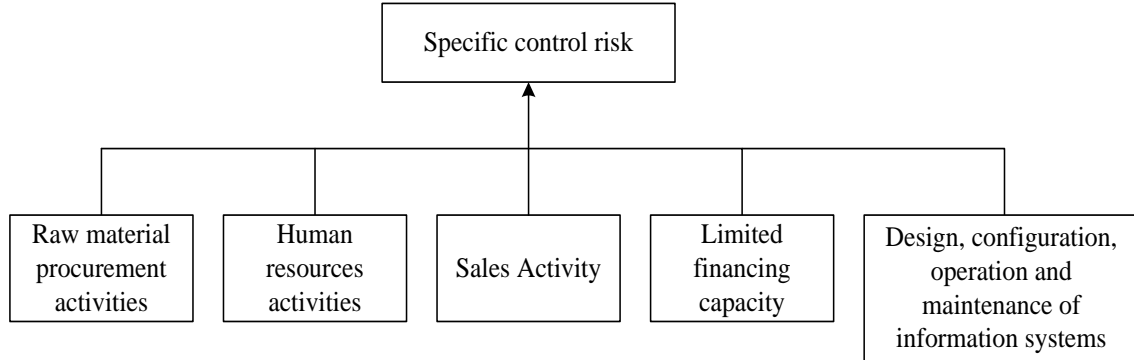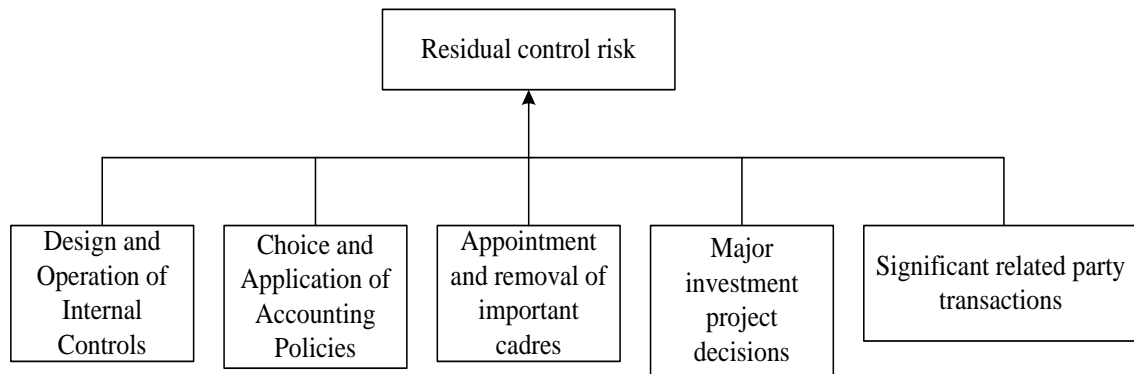

Figure 6 Specific Control Risk Map

Figure 7 Residual Control Risk Map

The material misstatement risk factor importance score table is shown in Table 2 and Table 3.

Table 2 Identification level importance evaluation table

		Absolutely important	Very important	More important	Slightly important	As important
Authentication layer	Raw material procurement activities	5	3	2	1	1
	Sales Activity	1	1	5	2	2
	Human resources activities	2	8	1	1	1
	Limited financing capacity	2	5	2	2	2
	Design, configuration, operation and maintenance of information systems	1	2	2	3	2

Table 3 Report layer importance score table

Report layer		Absolutely important	Very important	More important	Slightly important	As important
	Design and Operation of Internal Controls	1	5	3	1	1
	Choice and Application of Accounting Policies	2	2	5	1	1
	Appointment and removal of important cadres	2	3	3	2	1
	Major investment project decisions	1	1	5	3	1
	Significant related party transactions	1	5	2	1	2

The formula for calculating the weight is as follows:

$$Q_{op} = \frac{G_{op}}{\sum_{m=1}^{6} G_{op}}$$

(6)

Q - Weight set

As shown in Figure 8, it is the sequence value of the index importance of the specific control activity (identification layer) given by the auditor and the weight calculated according to the above formula [20].
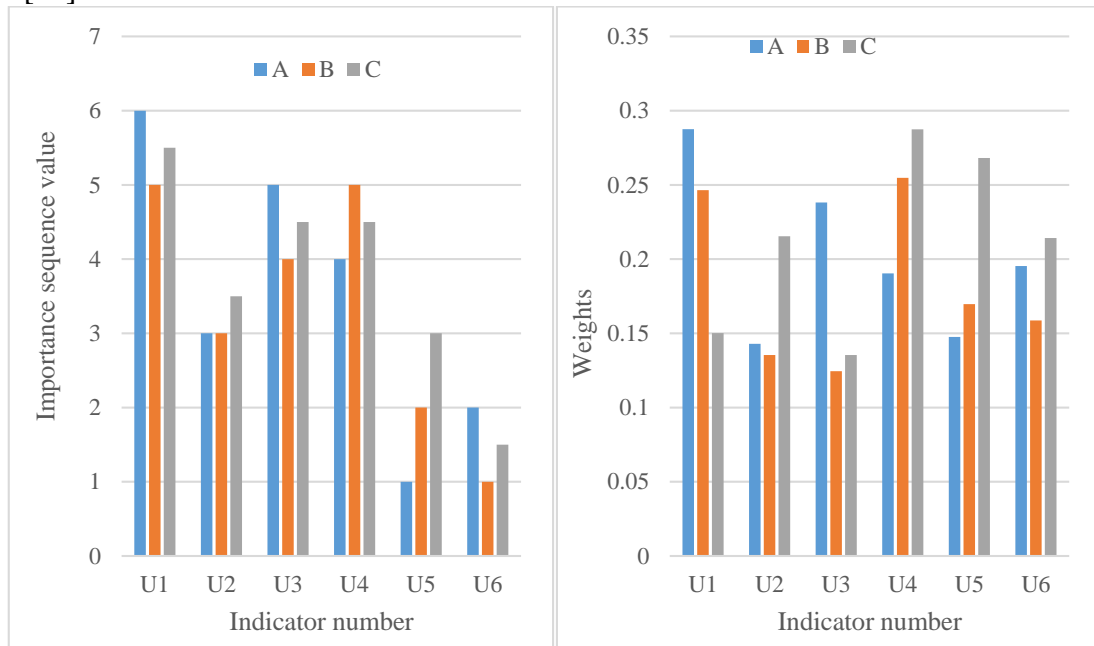

Figure 8 Importance and weight data

As shown in Figure 9, it is the risk evaluation of the identification layer and the risk evaluation
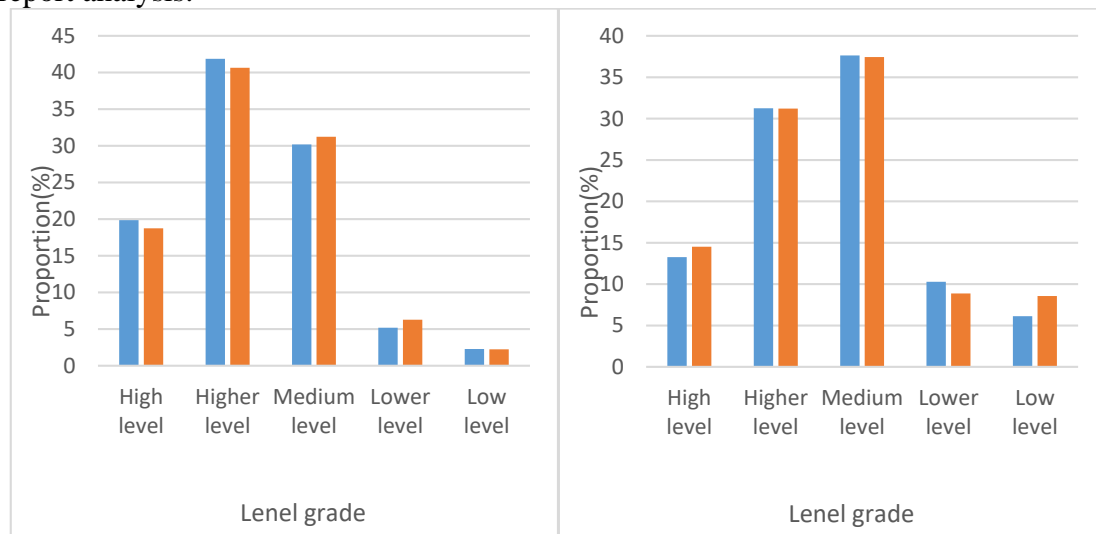
of the report analysis.

Figure 9 Risk assessment for assertion level and statement analysis

Factors influencing misstatement risks in financial statements include: (1) Hard-to-view accounts or transactions, such as non-traditional or third-party transactions, which often contain inaccuracies and require high technical expertise for CPA monitoring. (2) Complex transactions, as larger, intricate events increase material error risks, necessitating intelligent financial judgment.

When auditing misstatement risks, it is vital to: (1) Clearly define the scope of inspection, considering control elements and environments like national policies and industry regulations. (2) Examine component properties. (3) Choose appropriate accounting policy controls. (4) Supervise development policies and financial risks. (5) Set performance measurement standards for control elements. (6) Ensure management-related internal control measures. A well-defined scope helps assess management risks, identify errors, and apply additional auditing methods effectively.

5. Discussion

Addressing material misstatement risks is complex, as contributing factors vary widely and key accounting elements have diverse impacts. Effective responses require knowledgeable audit teams and professional scepticism. Statutory auditors should strengthen management, establish inspections, and ensure process control, with adjustments made to inspection scope and methods based on actual conditions to mitigate unforeseen risks.

Material misstatement risks in financial statements often stem from fraud, influenced by financial stress and operational pressures, such as inflating receivables and inventories. These risks are closely tied to the enterprise's characteristics and economic behaviors. Under property rights theory, economic behaviors' risks and benefits, initially borne by investors, are transferred to managers through corporate governance layers. Independent accounting departments incorporate these risks into financial statements, affecting investor decisions.

6. Conclusion

In the context of rapid social and economic development, the content and scope of regulatory work have been continuously improved, increasing the possibility of inaccurate financial statement risks. When auditing, the CPA identifies and assesses material deficiency risks and prepares a comprehensive risk plan. This paper proposes a risk level model for material misstatements,

evaluates risks for a selected company, and suggests preventive countermeasures. Preliminary prediction research is conducted, but limited data and academic depth lead to omissions. The status quo analysis lacks thorough internal judgment, and the theoretical grasp is insufficient. This study develops an evaluation index system for material misstatement risks, tested on China's real estate enterprises, yielding theoretical results. Future work should apply this system to audits in other industries to enhance its applicability.

References

[1] Lehmann E E, Seitz N, Wirsching K. Smart finance for smart places to foster new venture creation. Economia e Politica Industriale, 2017, 44(1):51-75.

[2] Donald D C. Smart Precision Finance for Small Businesses Funding. European Business Organization Law Review, 2020, 21(1):199-217.

[3] Shang H, Lu D, Zhou Q. Early warning of enterprise finance risk of big data mining in internet of things based on fuzzy association rules. Neural Computing and Applications, 2021, 33(9):3901-3909.

[4] Mita A F, Utama S, Fitriany F, et al. The adoption of IFRS, comparability of financial statements and foreign investors' ownership. Asian Review of Accounting, 2018, 26(3):391-411.

[5] Kim J H, Im C C. Reported Profits And Effective Tax Rate Following Accounting Standards Changes Analysis Of Consolidated Financial Statements And Separate Financial Statements. The journal of applied business research, 2017, 33(6):1171-1186.

[6] Xu W, Davidson R A, Cheong C S. Converting financial statements: operating to capitalised leases. Pacific Accounting Review, 2017, 29(1):34-54.

[7] Freebairn W. Westinghouse financial statements show how costs mounted before bankruptcy. Nucleonics Week, 2017, 58(23):4-5.

[8] Makanji H S, Jenis L G. Understanding Financial Statements in Clinical Practice: A Primer. Clinical Spine Surgery, 2017, 30(4):167-168.

[9] Cohen, Michael R. ISMP Medication Error Report Analysis - Insulin Preparation Error by Physician; Should Be Available in Automated Dispensing Cabinet Stock?; Medication List Filing Error; Institute for Safe Medication Practices Launches First Self-Assessment of Automated Di. Hospital Pharmacy, 2018, 53(2):90-92.

[10] Shelmerdine S C, Singh M, Norman W, et al. Automated data extraction and report analysis in computer-aided radiology audit: practice implications from post-mortem paediatric imaging. Clinical Radiology, 2019, 74(9):733.e11-733.e18.

[11] Garrido H, Rivero-Angeles M E, Flores I, et al. Seism Report Analysis in a Wireless Sensor Network with Cognitive Radio Capabilities. Ad-hoc & sensor wireless networks, 2017, 39(1-4):97-122.

[12] Cohen M R, Smetzer J L. ISMP Medication Error Report Analysis: Understanding Human Over-reliance on TechnologyIt's Exelan, Not ExelonCrash Cart Drug Mix-upRisk with Entering a "Test Order". Hospital pharmacy, 2017, 52(1):7-12.

[13] Harrington R L, Hanna M L, Elisabeth M S, et al. Defining Patient Engagement in Research: Results of a Systematic Review and Analysis: Report of the ISPOR Patient-Centered Special Interest Group. Value in Health, 2020, 23(6):677-688.

[14] Ling-Yan, Guo, Pei-Qiong, et al. [Cleidocranial dysplasia: a case report and gene mutation analysis]. West China journal of stomatology, 2019, 37(6):677-680.

[15] Azamgarhi T, Donaldson J, Shah A, et al. Dalbavancin to Treat Infected Massive Endoprostheses: A Case Report and Cost Comparison Analysis. Journal of Bone and Joint Infection, 2019, 4(5):234-237.

[16] Abdou Y, Elkhanany A, Attwood K, et al. Primary and secondary breast angiosarcoma: single center report and a meta-analysis. Breast Cancer Research and Treatment, 2019, 178(3):523-533.

[17] Saravanan C, Schumacher V, Brown D, et al. Meeting Report: Tissue-based Image Analysis. Toxicologic Pathology, 2017, 45(7):983-1003.

[18] Kharkhach A, Bouhout T, Serji B, et al. Undifferentiated Pancreatic Carcinoma with Osteoclast-like Giant Cells: a Review and Case Report Analysis. Journal of Gastrointestinal Cancer, 2021, 52(3):1106-1113.

[19] Huff, Aaron. TDS creates carrier risk analysis report. Commercial Carrier Journal, 2017, 174(8):38-39.

[20] Rebelato M G, Saran L M, Cury V B, et al. Environmental performance analysis: foundry industry case report. Management of Environmental Quality an International Journal, 2017, 28(2):248-263.