FINANCIAL REPORTING: AN ANALYTICAL PLATFORM FOR STUDYING THE RELATIONSHIP BETWEEN TRANSPARENCY OF LISTED COMPANIES AND INVESTMENT IN RESEARCH AND DEVELOPMENT

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Abstract.

The purpose of this study is to examine the relationship between transparency of listed companies in China and their investments in research and development (R&D), using financial reporting indicators. Corporate transparency refers to the public disclosure of financial and operational information by companies, which reduces information asymmetry and has a positive impact on corporate governance and research and development investment. The study finds that companies with high transparency can obtain more external financial support and increase R&D investment, especially in capital- and technology-intensive industries. Transparency can also optimize the allocation of internal resources and improve the success rate of R&D. However, existing research has mostly focused on the impact of transparency on financial performance, lacking studies on listed companies on China's main board, particularly in the field of research and development investment. This study takes listed companies on Shenzhen's ChiNext as a sample and, through empirical analysis, finds that corporate transparency is significantly and positively correlated with the intensity of research and development investment, while company size and net cash flow are negatively correlated with the intensity of R&D investment. The study suggests that companies should improve transparency, optimize resource allocation, and strengthen research and development investment. The government should also promote corporate innovation through economic incentives.

Keywords: financial reporting, transparency; research and development investment; information disclosure

In today's competitive market environment, a company's ability to innovate has become the key to its sustainable development. Research and Development (R&D) investment not only drives the development of new products and technologies but also enhances a company's market competitiveness. However, R&D activities are usually accompanied by high risks and uncertainties, and external investors are often cautious about these investments due to information asymmetry. Therefore, the improvement of corporate transparency has become particularly important.

In recent years, more and more studies have focused on how corporate transparency affects its innovative capabilities. According to a study in 2020, there is a significant positive correlation between corporate transparency and innovation performance. Companies with high transparency can attract more external funding, thereby increasing research and development investment. In addition, the theory of the transparent economy believes that full disclosure of information can not only reduce investors' risk perception but also optimize resource allocation and improve the success rate of R&D projects.

Although existing research has revealed the positive impact of transparency on R&D investment, there is still a lack of specific research on listed companies on China's Growth Enterprise Market (GEM), especially high-tech enterprises. Current literature mostly focuses on the impact of transparency on the overall financial performance of companies, lacking in-depth exploration in the field of R&D. Therefore, this study selects high-tech enterprises listed on the Shenzhen Stock Exchange from 2018 to 2021 as a sample, aiming to explore the relationship between corporate transparency and research and development investment through empirical analysis.

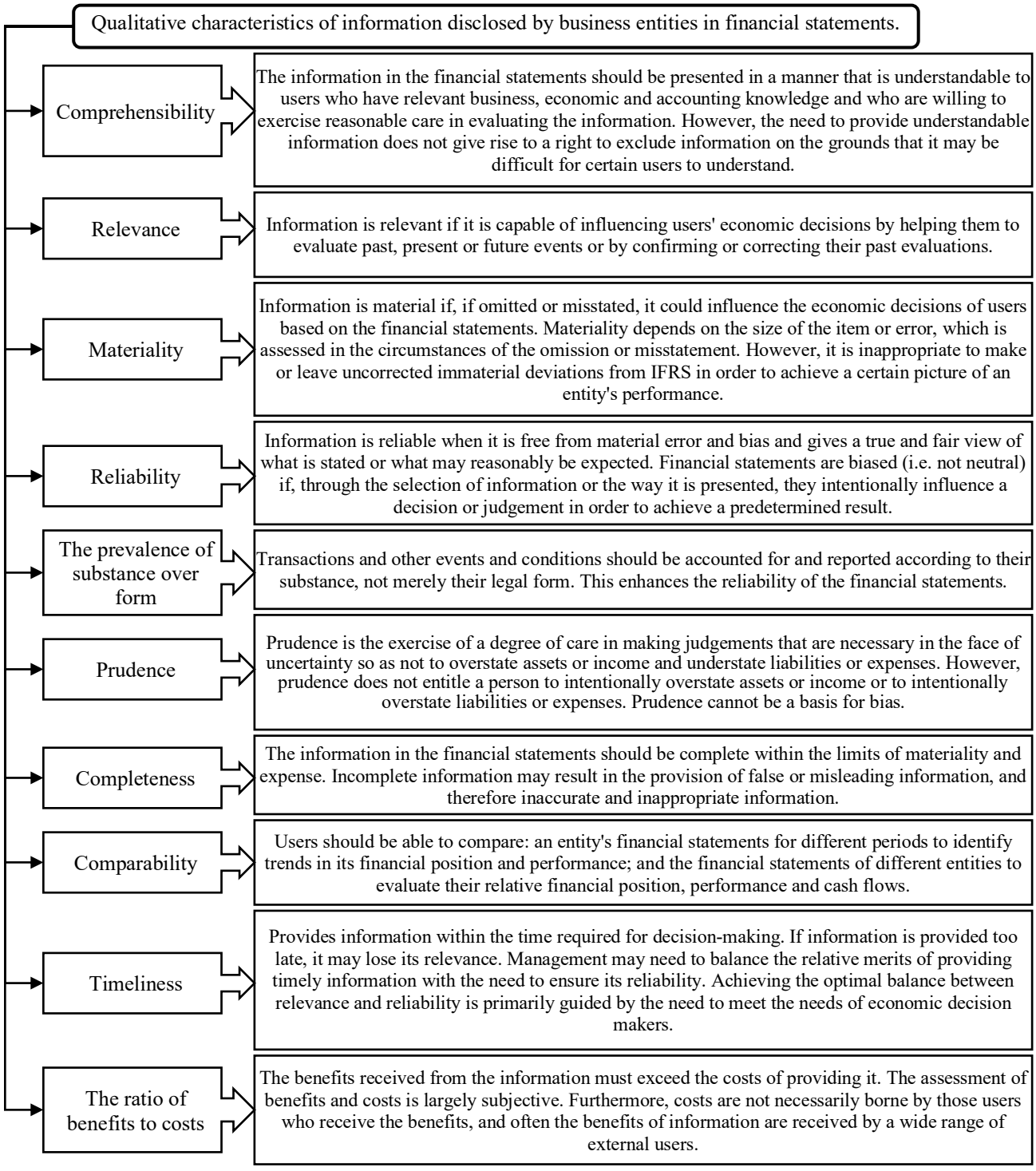

Fig. 1. *Qualitative characteristics of information disclosed by business entities in financial statements in accordance with IFRS*
Source: generalised by the authors based on [13].

In summary, corporate transparency is seen as a key factor in promoting R&D investment and innovation outcomes. By improving transparency, companies can not only enhance the trust of external investors but also effectively optimize the allocation of internal resources, thereby promoting continuous innovation and development. The goal of this study is to provide empirical evidence and

suggestions for companies to increase their research and development investment and thereby enhance their competitiveness.

A tool for preventing (significantly reducing) risks in the operation of enterprises is the creation of high-quality information support for their activities. Financial, management, statistical, tax reports visualise the results and consequences of activities, management features, accountability for entrusted resources (including tangible (intangible), financial, environmental, social, etc.) of a business entity. The qualitative characteristics of the information disclosed by business entities in their financial statements in accordance with the applicable International Financial Reporting Standards are shown in Figure 1.

Professionally prepared financial statement indicators will facilitate informed decision-making by investors, ensure more efficient functioning of capital markets and reduce the cost of capital. Individual business entities will benefit in similar ways, including easier access to capital markets, improved public relations, the ability to address existing environmental issues, and potentially lower cost of capital. The benefits include the possibility of improving the efficiency of management decisions, since a significant component of the internal financial and non-financial information of a modern enterprise is often based on indicators prepared for the preparation of general purpose financial statements [13].

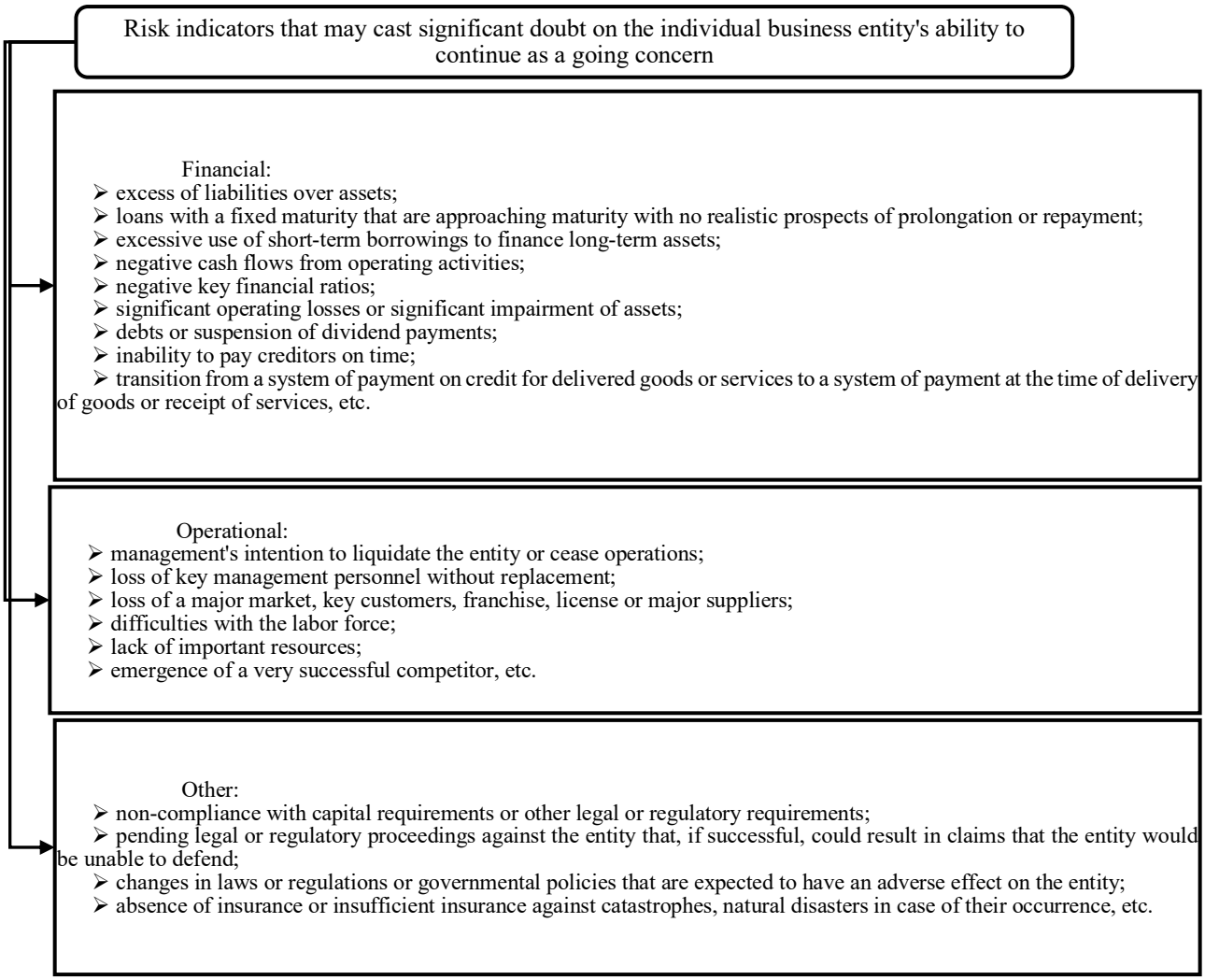

Fig. 2. *Risk indicators that may cast significant doubt on the ability of an individual business entity to continue as a going concern*
Source: generalised by the authors based on [12].

The current legislation defines the ‘going concern principle’ as one of the basic principles of organising accounting support and forming financial reporting indicators. The main content of which is that the valuation of assets and liabilities of an individual business entity is based on the assumption that its activities will continue in the future.

Failure to comply with this principle may indicate the existence of a material uncertainty about events or conditions that may cast significant doubt on the entity's ability to continue as a going concern and to report properly in accordance with applicable national and international standards. When performing financial analysis, audit (both state and independent) should focus on risk assessment procedures and their own relevant actions, research of events or conditions that may cast significant doubt on the ability of the business entity to continue as a going concern. Figure 2 shows examples of risk indicators that, individually or in combination, may cast significant doubt on an entity's ability to continue as a going concern. This list is not exhaustive and the presence of one or more of the items presented in Figure 2 does not necessarily mean that a material uncertainty exists. Thus, the main thing that the going concern principle provides is a forecast. Based on the indicators of the financial statements prepared in accordance with it, the management of an individual business entity can plan its own further actions. [12].

The formation of a financial potential management system for sustainable development involves the choice of a financial policy strategy, in which, with optimal interaction of potential components, its generalised value reaches the highest level. The actual mechanism of potential management is determined under the influence of three main groups of factors: financial and economic, socio-economic, and organisational and managerial. By identifying the most important factors of influence, it becomes possible to identify and prevent risks of agricultural enterprises in the context of sustainable development.

On the one hand, the generated reporting reflects the activities of business entities, reveals their real life, but does not exclude its use for abuse, and on the other hand, it has a mysterious, mystical, incomprehensible meaning for an unprepared person (even a nation) [11].

Scientists have identified the regulation of the process of consolidation of financial statements at different levels (Figure 3).

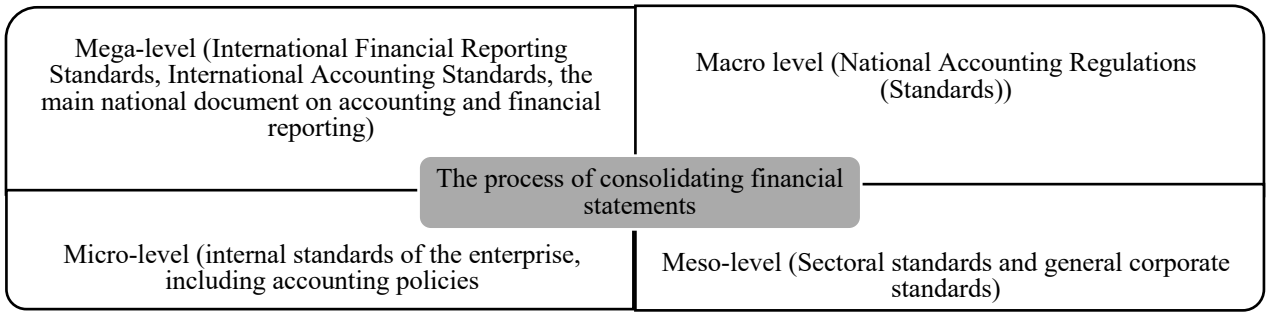

Fig. 3. *Levels of regulation of the financial reporting consolidation process*
Source: compiled by the author on the basis of [14].

Companies that control other business entities (parent companies), in addition to financial statements on their own financial and business operations, prepare and submit consolidated financial statements of the group in accordance with national accounting regulations (standards) or international financial reporting standards. Accordingly, the presence of these two factors (the existence of a developed financial market and the share of large private businesses) gave rise to consolidated financial statements. The use of automated accounting systems became a catalyst for further development of financial reporting, which continues to this day. International Financial Reporting Standard 10, Consolidated Financial Statements, aims to identify the principles for the

presentation and preparation of consolidated financial statements when an entity controls one or more other entities. The conditions for achieving this objective are shown in Figure 4.

Relevant processes and market conditions have led to the formation of associations of business entities as consolidated groups, enterprises or holding companies that prepare consolidated financial statements in accordance with International Financial Reporting Standards (IFRS). IFRS 10 'Consolidated Financial Statements' sets out the accounting requirements for the preparation of consolidated financial statements (Figure 5).

Special attention should be paid to the advantages of preparing financial reporting indicators in accordance with international standards. They are undeniable both for business entities and for the vast majority of stakeholders (users) of financial statements. International Financial Reporting Standards are a tool for unification, consolidation, and globalization of both accounting and auditing and global economic and business relations in general. The principles laid down in the preparation of IFRS financial statements contribute to the reflection of relevant information on the property status, financial performance and cash flows of an individual company or group. This fact confirms the value of International Financial Reporting Standards (IFRS) for existing and potential investors, both domestic and foreign, which undoubtedly makes it important to accelerate the process of implementing IFRS in the activities of Ukrainian business entities in all components of production and economic activity.

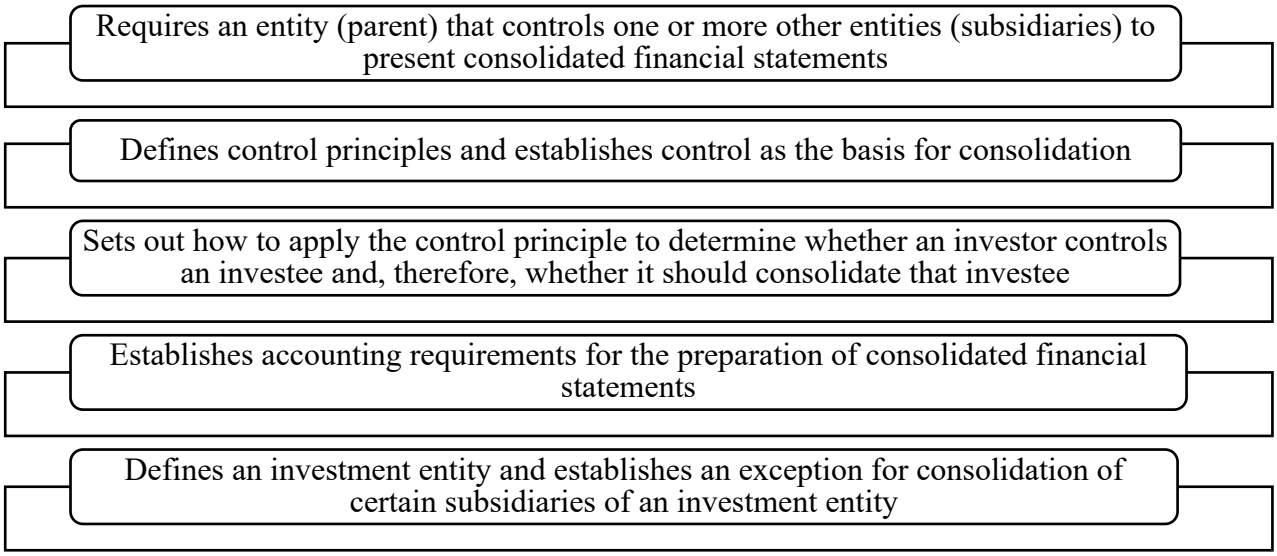

Fig. 4. *Conditions for identifying the principles of presentation and preparation of consolidated financial statements*
Source: compiled by the author based on [8].

An investor, regardless of the nature of its participation in the operation of a business entity (investee), determines whether it is a parent by assessing whether it controls the investee. An investor controls an investee if it is exposed to variable returns from its activities or incurs risks associated with those activities and has the ability to affect those returns through its power over the investee.

An investor controls an investee when, and only when, it has:

- power over the investee;
- exposure to risks or rights to variable returns from its involvement with the investee;
- the ability to use its power over the investee to affect the investor's results [8].

An investor has power over an investee if the investor has existing rights that give it the current ability to direct the relevant activities of the investee that significantly affect its performance. Power results from the existence of rights. In some cases, the determination of power is straightforward, for

example, when power over an investee is derived directly and exclusively from the voting rights attached to equity instruments such as shares and can be measured based on the voting rights of those shareholders. In other cases, the measurement will be more complex and require consideration of more than one factor, for example, when power is derived from one or more contractual arrangements.

An investor is exposed, or has rights, to variable returns from its involvement with an investee when its returns from its involvement have the potential to be affected by changes in the performance of the investee. Variable returns from an investee may be either positive or negative, or both positive and negative.

Although only one investor may control an investee, the returns from an investee may be allocated to multiple parties. For example, the holders of non-controlling interests may participate in the distribution of the investee's profits or dividends.

An investor controls an investee if the investor not only has power over the investee and rights to variable returns from its involvement with the investee or exposure to risks associated with its involvement with the investee, but also has the ability to use its power to affect those returns. Therefore, an investor with decision-making rights must determine whether it is a principal or an agent. An investor that is an agent does not control the investee when it exercises the decision-making rights delegated to it [8].

In the current business environment, the process of implementing the financial reporting system is underway, which provides for the submission of financial statements in a unified electronic format and XBRL, prepared in accordance with the IFRS XBRL taxonomy, on a ‘single window’ basis. The XBRL format is a universally recognised international standard that allows processing large volumes of qualitative and quantitative indicators.

XBRL (EXtensible Business Reporting Language) is an open standard for the exchange of business information that is widely used in the world. XBRL allows for the expression of requirements for reporting forms common to market participants and regulators using semantic tools. The standard is based on the extensible markup language XML and uses such XML-related technologies as XML Schema, XLink, XPath and the namespace. One of the main objectives of XBRL is to regulate the exchange of financial information, such as financial reports. The XBRL language specification is developed and published by the independent international organization XBRL International, Inc.

In many developed countries, XBRL is a widely recognised standard for the electronic presentation of IFRS financial statements. Today, XBRL is officially recommended for use and supported by the International Accounting Standards Board for the electronic preparation of IFRS financial statements.

XBRL is based on standards for communication and exchange of business information between business systems. These communications are based on the descriptions of metadata sets set out in the taxonomy, which describe both individual reporting indicators and the relationships between them and other semantic elements of the taxonomy. A set of information intended for transmission or exchange is contained in a so-called XBRL report.

The benefits of a particular country's transition to the new XBRL format (both for users and for business entities preparing financial information) are shown in Figure 6.

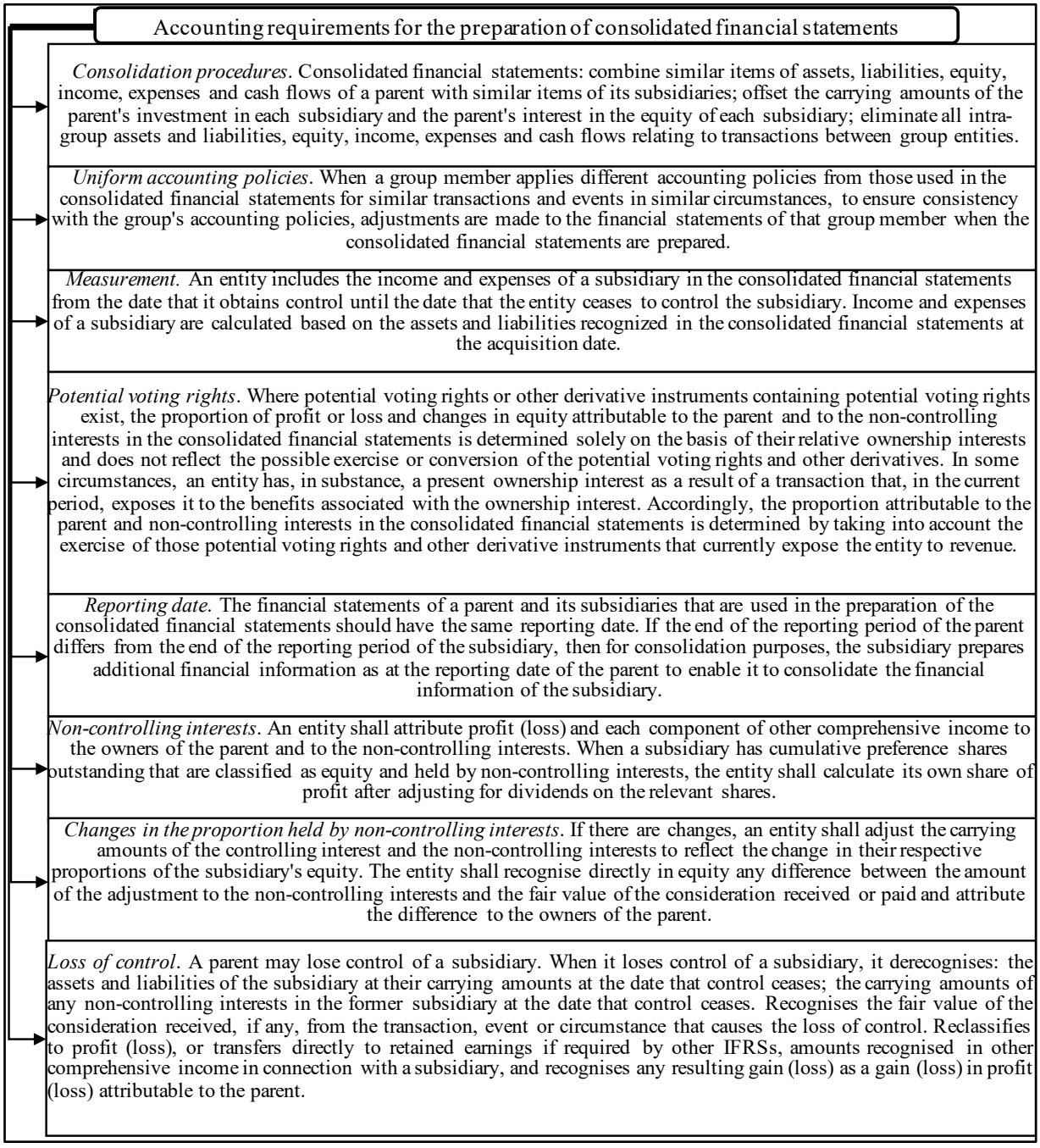

Fig. 5. *Accounting requirements for indicators of consolidated financial statements*
Source: compiled by the author based on [8].

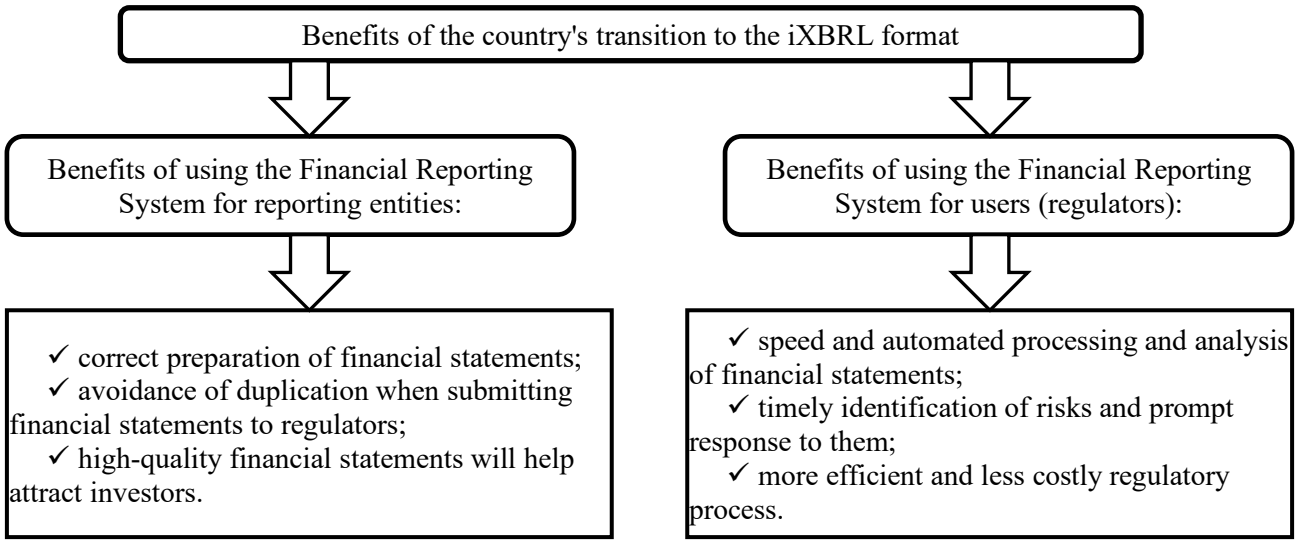

Fig. 6. *Benefits of a country's transition to the iXBRL format when presenting financial statements in accordance with IFRS*
Source: compiled by the author

Financial statements and consolidated financial statements are prepared by reporting entities using special software and submitted through the Financial Reporting System Portal. The participants of the financial reporting system are reporting entities that submit financial statements in the iXBRL format, governmental authorities that regulate such entities and auditors.

In recent years, with the rapid development of globalization and information technology, corporate transparency has played an increasingly important role in corporate governance and the capital market. Corporate transparency, by reducing information asymmetry, enhances the trust of external investors in companies, thereby affecting the company's resource allocation and long-term investment strategies, especially research and development investment [10]. For listed companies in China, as regulatory policies and investor expectations change, corporate transparency has become an important factor affecting the company's innovative capabilities and market competitiveness. This section will systematically review the relationship between the transparency of listed companies in China and research and development investment, focusing on the impact mechanism of transparency on R&D investment, industry differences, and policy recommendations.

Corporate transparency refers to the public disclosure of financial, operational, and governance information by companies to external stakeholders (such as investors, creditors, government, and the public) to reduce information asymmetry and enhance the trust and legitimacy of the company [10,21,22]. In the modern market economy, information asymmetry is one of the key factors leading to capital market failure and resource misallocation. High transparency increases the visibility of corporate actions, allowing external stakeholders to obtain more accurate and timely information, thereby reducing decision-making uncertainty [5,6].

The improvement of transparency has had a profound impact on corporate behavior in many aspects. First, it reduces the risk perception of investors, thereby reducing the financing costs of companies and enabling them to obtain more external financial support. This is particularly important in the high-risk field of research and development investment, as transparency reduces investors' doubts about corporate innovation activities [18]. The financial reports and operational information disclosure of transparent companies are more reliable, making it easier for them to obtain bank loans or financing through equity financing, thereby promoting their innovation activities [9,10].

Secondly, corporate transparency improves the effectiveness of internal governance. Transparency reduces the information asymmetry between owners and managers, thereby reducing agency problems. Studies have shown that the management of companies with high transparency

faces more external supervision, so they tend to adopt more conservative long-term strategies in decision-making, rather than focusing on short-term financial gains [15,16,17]. This is particularly significant in research and development investment, as R&D usually requires continuous capital investment and a long return period. Through transparent financial disclosure, management can more effectively explain the strategic value of research and development projects, thereby gaining the support of shareholders and investors [3,4].

Additionally, corporate transparency also has a positive impact on its legitimacy. Companies enhance their legitimacy and reputation in society by disclosing information related to environmental, social, and governance (ESG) issues. This legitimacy makes it easier for companies to obtain policy support and external cooperation opportunities, thus providing a favorable external environment for research and development activities [1,2]. For example, pointed out that companies can attract more external partners (such as universities and research institutions) to cooperate in technology R&D through public and transparent information disclosure, which helps to accelerate the transformation of innovation outcomes.

In summary, the improvement of corporate transparency not only affects the flow of external funds but also promotes corporate innovation and research and development activities through various channels, such as strengthening internal governance and improving corporate legitimacy. For listed companies in China, as the capital market gradually matures and investor requirements increase, transparency becomes a key factor in enhancing corporate competitiveness.

Corporate research and development investment is a core means of enhancing technological innovation and competitive advantage, especially against the backdrop of intensified global competition and rapid technological change. Research and development investment is crucial for the long-term development of companies. The allocation of resources in R&D by companies depends not only on internal management's strategic decisions and risk preferences but is also deeply influenced by the external market environment, capital support, and corporate transparency. Transparency, by reducing information asymmetry, enhances the confidence of external investors in corporate innovation activities, directly or indirectly promoting research and development investment [6].

In companies with high transparency, the publicity of financial information increases investors' tolerance for the uncertainty of research and development projects, thereby reducing financing costs. This is particularly important for listed companies in China, as the capital market is undergoing a maturation process, and investors' expectations for corporate transparency and innovation capabilities are increasing. With more capital inflow, companies with high transparency can increase their investment in cutting-edge technologies and enhance their market competitiveness [10].

Furthermore, transparency improves the efficiency of internal governance. Management faces stronger external supervision, so when making decisions, they are more inclined to consider long-term research and development strategies rather than focusing solely on short-term financial performance. Pham and Tran [17] pointed out that the improvement of transparency can effectively alleviate agency problems, making managers more willing to make long-term investments, thereby increasing the positivity of research and development investment. This is closely related to the situation of listed companies in China, especially in high-risk research and development activities, where transparency can enhance shareholders' support for the company's long-term strategy and further promote the development of innovation activities.

There are differences in the demand for R&D and investment performance across different industries. Technology-intensive industries, such as information technology and pharmaceuticals, usually require large-scale and continuous research and development investment to maintain their technological innovation capabilities. In contrast, traditional manufacturing and service industries have relatively lower research and development investment. Sun and Tang [18,19] believe that companies with high transparency are more likely to attract external capital in technology-intensive industries, thereby providing adequate financial support for their research and development activities.

At the policy level, the government encourages companies to increase research and development investment by providing R&D subsidies and tax incentives. In addition, the transparency requirements and information disclosure standards of regulatory agencies also promote companies to invest more resources in research and development activities. Chen and Zhang [1,2] pointed out that transparency is not only the foundation of trust in the capital market but also a key factor in promoting corporate R&D cooperation. Through transparent information disclosure, companies can attract more partners, especially in cooperation with universities and research institutions, which is particularly important.

In summary, corporate research and development investment is not only a driver of innovation and market competitiveness but also a result of the interaction between transparency and corporate governance. Among listed companies in China, increased transparency can effectively promote research and development investment, thereby enhancing the company's long-term innovation capabilities and competitive advantage. Therefore, improving corporate transparency is not only a necessary means to improve governance structure but also a key measure to promote technological innovation and economic growth.

In recent years, with the advancement of information technology and the gradual opening of the capital market, corporate transparency has played an increasingly crucial role in the governance structure of listed companies in China. Transparency has not only enhanced the trust of external investors but also, to a certain extent, improved the allocation of corporate resources and long-term strategic decision-making. Especially in terms of research and development investment, transparency has become an important driving force for promoting corporate innovation and competitiveness [10].

The various relationships and influencing factors between transparency and R&D investment are shown in Figure 7.

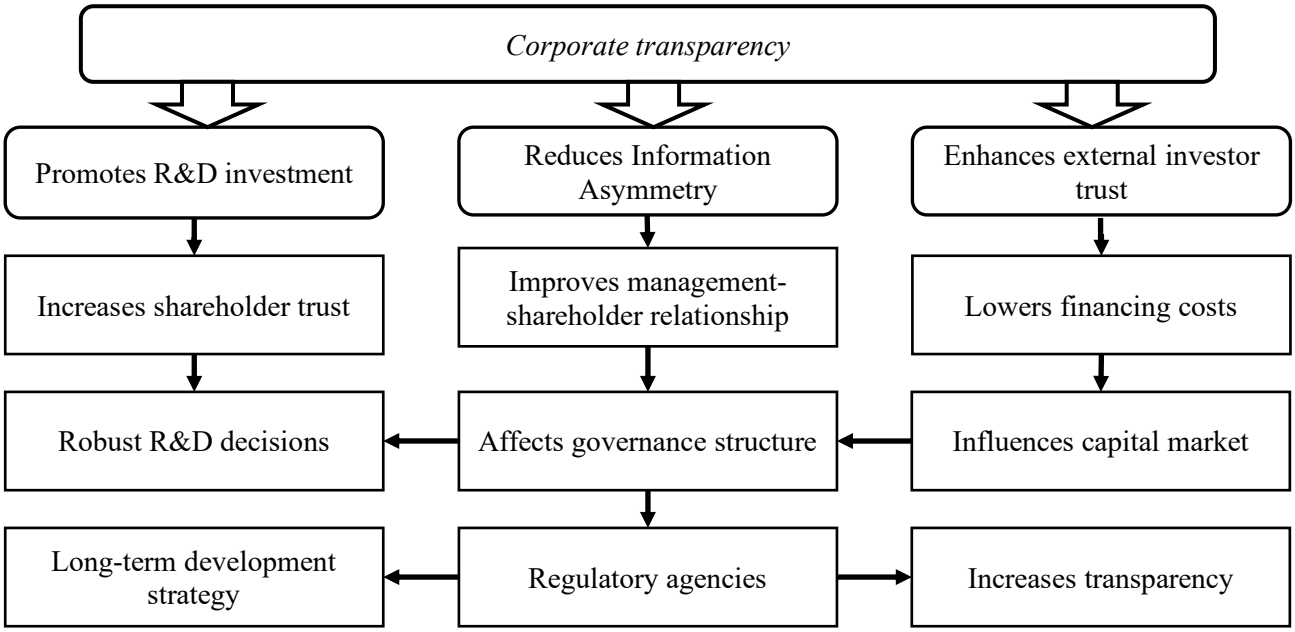

Fig. 7. *Various relationships and influencing factors between transparency and R&D investment*
Source: compiled by the author

From Figure 7, we can observe various relationships and influencing factors between transparency and research and development investment. Corporate transparency profoundly impacts R&D investment by reducing information asymmetry, enhancing external trust, and lowering financing costs. In a high-transparency environment, information regarding a company's financial status and management strategies is more openly available, allowing external investors to better assess the company's innovation potential

and risk tolerance. This not only improves financing efficiency but also reduces capital costs to some extent, enabling companies to allocate more resources to R&D and gain a stronger competitive advantage in technology-intensive industries [5,6,7].

In China's listed companies, regulatory bodies have gradually increased their demands for transparency, leading firms to align their information disclosure and governance structures more closely with international standards. This shift effectively mitigates the information asymmetry issue between company management and shareholders, allowing management to implement long-term development strategies more robustly in R&D decision-making. Moreover, high transparency can enhance shareholder trust in research and development projects, thereby reducing the likelihood of cutting research and development investment due to short-term profit pressures. Pham and Tran [16] point out that enhanced transparency effectively reduces agency problems, prompting corporate managers to prioritize long-term innovation investments in their decisions.

The promoting effect of transparency on research and development investment shows significant variations across different industries. Technology-intensive sectors (such as information technology and biomedicine) have higher capital demands and innovation requirements, facing greater R&D risks. Transparency can alleviate investor concerns to some extent and increase capital inflows, thereby promoting corporate R&D activities [20]. In contrast, traditional manufacturing and service industries have lower funding requirements and innovation pressures, resulting in a relatively limited impact of transparency on research and development investment. Thus, the role of transparency in promoting R&D investment varies by industry, with capital-intensive and technology-driven firms benefiting the most.

Several theoretical frameworks can explain the relationship between transparency and research and development investment. Agency theory posits that transparency reduces information asymmetry between management and shareholders by publicly disclosing financial and operational information, thus enhancing shareholder support for R&D activities [4]. The Resource-Based View (RBV) emphasizes that a firm's core competitiveness lies in the accumulation of scarce resources, with research and development investment being a means to gain this advantage. High transparency increases a firm's credibility in the capital market, making it easier to attract external resource support, thereby securing funding for ongoing innovation [5,6]. Additionally, legitimacy theory suggests that transparent information disclosure enhances corporate social responsibility and legitimacy, improving a firm's reputation in the capital market and society, which aids in obtaining policy support and social recognition for research and development investments [1,2].

In summary, transparency significantly influences research and development investment in China's listed companies. It not only attracts more funding support through the capital market but also enhances internal governance and social legitimacy, thereby improving firms' long-term innovation capabilities. Particularly in technology-intensive industries, transparency serves as a crucial tool for driving research and development investment and enhancing corporate competitiveness. In the future, as China's capital market continues to open up and regulatory policies improve, the impact of corporate transparency on R&D investment will become more pronounced, likely promoting sustained innovation and high-quality economic development in Chinese enterprises.

Current research indicates that corporate transparency significantly affects corporate governance, capital liquidity, and research and development investment. However, within the context of China's listed companies, the specific mechanisms at play require further exploration. On one hand, most studies focus primarily on mature capital markets or specific industry contexts, overlooking the unique impact of transparency on research and development investment in China's emerging markets. In the Chinese market, there are considerable differences in governance structures and transparency levels among listed companies, and the relative inadequacy of institutions and regulations raises questions about whether increased transparency genuinely promotes R&D investment. Therefore, comprehensive research combining data from Chinese listed companies is necessary to clarify its true impact on research and development investment.

Moreover, existing literature often limits itself to singular perspectives, such as agency theory, resource-based view, or legitimacy theory, lacking a comprehensive analysis across multiple theoretical frameworks, which fails to elucidate the specific pathways and multi-level effects of transparency on research and development investment. At the same time, significant differences in external regulatory pressure, market competition, and technology intensity across industries have not been sufficiently explored in existing studies. Thus, conducting cross-industry, systematic empirical analyses of Chinese listed companies to investigate the heterogeneous effects of transparency under varying mechanisms and industry contexts is not only crucial for filling theoretical gaps but also holds significant implications for policy-making, enhancing corporate governance, and optimizing resource allocation.

This study aims to explore the impact of corporate transparency on research and development investment, establishing an empirical analysis framework based on econometric models. By examining high-tech enterprises listed on the Shenzhen Stock Exchange from 2018 to 2021, the relationship between corporate transparency and R&D intensity will be analyzed, leading to corresponding research hypotheses. These hypotheses are derived from logical reasoning regarding the relationship between transparency and research and development investment in high-tech enterprises. The verification of these hypotheses will occur in subsequent empirical analyses. Through an in-depth examination of the relationship between transparency and corporate R&D investment, this research aspires to provide valuable references and suggestions for enterprises.

To comprehensively measure corporate research and development investment, this study adopts R&D intensity indicators. Previous literature typically employs two measurement methods: one uses the ratio of R&D expenditure to total funding, and the other uses the ratio of R&D expenditure to operating income. R&D expenditure quantifies a company's R&D status over a year and is a flow metric constrained by the company's operational status in that year. To eliminate the influence of this factor, the second method will be used.

This section aims to construct an empirical analysis model to explore the impact of transparency on corporate R&D investment. The model design will follow the principles of scientific rigor, reasonableness, and operability, ensuring the accuracy and reliability of the analysis results.

This research will employ a linear regression model to analyze the impact of transparency on high-tech enterprises. The linear regression model is a commonly used analytical method in economics and social sciences that effectively handles the relationship between multiple independent variables and a single dependent variable. The basic form of the model is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon$$

In the model, Y represents the density of high R&D investment, X1,X2,…,XnX1, X2,…,Xn represent different dimensions of the transparent economy, such as company size and operating income. β0 is the intercept term, β1,β2,…,βnβ1, β2,…,βn are the coefficients of the variables, indicating the degree of influence of each dimension on corporate R&D investment, and єє is the error term. The definitions and descriptions of the variables are presented in Table 1.

Table 1. *Variable definitions and descriptions*

Variable Type	Symbol	Name	Description
Dependent Variable	R&D Intensity	R&D Intensity	Measured as the ratio of R&D expenditure to operating income
Independent Variable	Tran	Corporate Transparency	Disclosure assessment results from the Shenzhen Stock Exchange: Excellent (4 points), Good (3 points), Pass (2 points), Fail (1 point)
Control Variable	Size	Company Size	Natural logarithm of total assets at year-end
	Income	Operating Income	Natural logarithm of total income at year-end
	Net cash flow	Net Cash Flow	Natural logarithm of net cash flows from operating activities
	Operating profit	Operating Profit	Natural logarithm of net profit at year-end

This study focuses on high-tech enterprises listed on the Shenzhen Stock Exchange from 2018 to 2021, primarily in sectors such as computing, software, and specialized equipment. The sampling steps involved: first, selecting companies that had been evaluated before 2018; second, excluding those that did not disclose R&D information; third, removing companies marked as ST or *ST in that year; fourth, excluding firms with incomplete financial data; fifth, eliminating those with insufficient information disclosure; and finally, excluding companies with significant losses. After these filtering steps, a sample of 714 listed companies was determined. Data were sourced from the CSMAR database and organized and analyzed using Excel 2013 and SPSS software. This model design and variable definition lay the groundwork for subsequent empirical analysis, which will collect and analyze data to reveal the specific effects of transparency on high-tech enterprises. The results of the assessment of information transparency of the sample companies are shown in Table 2.

Table 2. *Evaluation results of sample companies' information transparency*

Year	A Excellent		B Good		C Pass		D Fail		Total
	Sample Size	Percentage	Sample Size	Percentage	Sample Size	Percentage	Sample Size	Percentage	
2018	33	18.86%	130	74.29%	11	6.29%	1	0.57%	175
2019	35	19.13%	143	78.14%	4	2.19%	1	0.55%	183
2020	30	16.76%	145	81.01%	3	1.68%	1	0.56%	179
2021	34	19.21%	135	76.27%	8	4.52%	0	0.00%	177
Total amount	132	18.49%	553	77.45%	26	3.64%	3	0.42%	714

This study is based on the data of Shenzhen Stock Exchange-listed companies from 2018 to 2021, as shown in Table 2. According to the information disclosure quality rating from the Shenzhen Stock Exchange, corporate transparency is classified into four levels: Excellent (A), Good (B), Pass (C), and Fail (D). The sample indicates that most companies fall into the Good and Pass categories, with a smaller proportion classified as Excellent and the least in the Fail category. The study aims to

explore the impact of corporate transparency on research and development investment, providing empirical evidence to enhance corporate innovation capabilities.

Empirical results and analysis. Descriptive statistics of the sample are presented in Table 3.

Table 3. *Descriptive Statistics of the Sample*

Name	Sample Size	Minimum	Maximum	Mean	Standard Deviation	Median
R&D Intensity	714	0.060	44.070	8.337	6.076	6.055
Tran	714	1.000	4.000	3.140	0.468	3.000
Size	714	8.380	11.488	9.332	0.368	9.283
Income	714	7.910	10.818	9.152	0.424	9.119
Net cash flow	714	5.812	10.069	8.188	0.565	8.211
Operating profit	714	6.527	10.003	8.152	0.541	8.188

This study conducted a descriptive statistical analysis of 714 Shenzhen Stock Exchange-listed companies. The results in Table 3 show that the average R&D investment intensity (R&D Intensity) is 8.337, the average corporate transparency score (TRAN) is 3.140, the average company size (SIZE) is 9.332, and the average operating income and net cash flow are 9.152 and 8.188, respectively. The average operating profit is 8.152, with detailed statistics for standard deviation and median. These metrics provide foundational data for the subsequent analysis of the relationship between corporate transparency and research and development investment.

The correlation analysis (Pearson correlation - triangular format) is shown in Table 4.

From Table 4, it can be seen that correlation analysis was used to study the relationships between R&D Intensity and TRAN, SIZE, Income, Net Cash Flow, and Operating Profit. The Pearson correlation coefficient indicates the strength of these relationships. Specifically, the correlation coefficient between R&D Intensity and TRAN is 0.103, showing significance at the 0.01 level, indicating a significant positive correlation between R&D Intensity and Tran.

Table 4. *Correlation Analysis (Pearson Correlation - Triangular Format)*

	R&D Intensity	Tran	Size	income	Net cash flow	Operating profit
R&D Intensity	1					
Tran	0.103**	1				
Size	-0.098**	0.133**	1			
Income	-0.012	-0.053	0.080*	1		
Net cash flow	-0.060	-0.019	-0.030	0.654**	1	
Operating profit	-0.030	0.003	-0.001	0.651**	0.625**	1
* $p<0.05$ ** $p<0.01$						

The correlation coefficient between R&D Intensity and SIZE is -0.098, also significant at the 0.01 level, indicating a significant negative correlation. The correlation coefficient between R&D Intensity and Income is -0.012, close to 0, with a p-value of 0.746 (>0.05), indicating no correlation

between R&D Intensity and Income. The correlation coefficient between R&D Intensity and Net Cash Flow is -0.060, also close to 0, with a p-value of 0.107 (>0.05), indicating no correlation between R&D Intensity and Net Cash Flow. The correlation coefficient between R&D Intensity and Operating Profit is -0.030, close to 0, with a p-value of 0.421 (>0.05), indicating no correlation between R&D Intensity and Operating Profit. The results of the linear regression analysis are shown in Table 5.

Table 5. *Linear Regression Analysis Results (n=714)*

	Unstandardized Coefficients		**Standardized Coefficients**	***t***	***p***	**Collinearity Diagnostics**	
	B	**Standard Error**	***Beta***			**VIF**	**Tolerance**
Constant	22.346	7.328	-	3.049	0.002**	-	-
Tran	1.594	0.487	0.123	3.275	0.001**	1.026	0.974
Size	-2.058	0.624	-0.125	-3.300	0.001**	1.041	0.961
Income	1.252	0.778	0.087	1.610	0.108	2.157	0.464
Net cash flow	-1.134	0.563	-0.106	-2.014	0.044*	2.005	0.499
Operating profit	-0.244	0.585	-0.022	-0.417	0.677	1.981	0.505

R^2 0.031

Adjusted R^2 0.024

F $F(5,708)=4.509, p=0.000$

D-W Value 1.143

Note: dependent variable = R&D Intensity

* $p<0.05$ ** $p<0.01$

From Table 5, it can be seen that Tran, Size, Income, Net Cash Flow, and Operating Profit are used as independent variables, while R&D Intensity is the dependent variable in the linear regression analysis. The model formula derived is:

R&D \ Intensity = 22.346 + 1.594 \times Tran - 2.058 \times SIZE + 1.252 \times Income - 1.134 \times Net \ Cash \ Flow - 0.244 \times Operating \ Profit.

The model's R^2 value is 0.031, meaning that Tran, Size, Income, Net Cash Flow, and Operating Profit can explain 3.1% of the variation in R&D Intensity. During the F-test of the model, it was found that the model passed the F-test (F=4.509, p=0.000<0.05), indicating that at least one of Tran, Size, Income, Net Cash Flow, or Operating Profit has an impact on R&D Intensity.

The regression coefficient for TRAN is 1.594 (t=3.275, p=0.001<0.01), indicating that TRAN has a significant positive impact on R&D Intensity. The regression coefficient for SIZE is -2.058 (t = - 3.300, p = 0.001 < 0.01), indicating that SIZE has a significant negative impact on R&D Intensity. The regression coefficient for Income is 1.252 (t=1.610, p=0.108>0.05), indicating that Income does not have an impact on R&D Intensity. The regression coefficient for Net Cash Flow is -1.134 (t=-2.014, p=0.044<0.05), indicating that Net Cash Flow has a significant negative impact on R&D Intensity. The regression coefficient for Operating Profit is -0.244 (t=-0.417, p=0.677>0.05), indicating that Operating Profit does not have an impact on R&D Intensity.

In summary, Tran has a significant positive impact on R&D Intensity, while SIZE and Net Cash Flow have significant negative impacts. However, Income and Operating Profit do not impact R&D Intensity.

Conclusions

The study found that a well-formed information support for the activities of business entities is an instrument for preventing (significantly reducing) risks in their functioning in the context of sustainable development. The author identifies the qualitative characteristics of the information disclosed by enterprises in their financial statements in accordance with current IFRS and identifies risk indicators that, individually or in aggregate, may cast significant doubt on the ability of an individual business entity to continue as a going concern within a certain forecast period. The advantages and possible mistakes that may occur when a country transitions to the iXBRL format when presenting financial statements in accordance with international standards are disclosed.

Significant positive impact of corporate transparency on research and development investment: The empirical analysis reveals a significant positive correlation between corporate transparency (Tran) and R&D investment intensity (R&D intensity). Companies with higher transparency are more likely to gain the trust and support of external investors, reducing information asymmetry and promoting increased research and development investment. Enhancing transparency can drive companies to invest more in innovative activities by reducing uncertainty and perceived risks in the capital market.

Negative impact of company size on R&D investment: There is a significant negative correlation between company size (SIZE) and R&D investment, suggesting that larger companies may tend to reduce high-risk R&D investments due to their established market positions and mature operations. This may reflect a preference for short-term returns in decision-making or the complexity of internal resource allocation, leading larger firms to be less aggressive in innovation investments compared to SMEs.

Negative correlation of net cash flow with R&D investment: The negative correlation between net cash flow (Net Cash Flow) and R&D investment indicates that companies may prioritize other pressing needs over direct R&D projects, even when they have ample cash flow. Firms may choose more conservative investment strategies despite having sufficient funds.

Insignificant impact of income and operating profit on R&D investment: The effects of operating income (income) and operating profit (operating profit) on R&D investment did not reach statistical significance, indicating that these factors are not decisive in determining R&D investment.

Based on the results of the study, we can formulate the following recommendations:

Enhance corporate transparency: Companies should improve the quality of their information disclosure to strengthen external investors' confidence in their innovation projects. Particularly in capital-intensive industries where R&D investments are high, enhancing transparency can effectively attract funding and promote long-term innovation capabilities.

Optimize internal resource allocation: Large companies should allocate resources wisely to maintain operational stability while avoiding neglect of R&D due to scale effects. By increasing transparency and strengthening internal innovation incentives, larger firms can maintain their technological advantages.

Strengthen strategic investment in R&D: Regardless of cash flow status, companies should prioritize R&D investment in their strategic planning, especially for long-term and high-risk innovation projects. Firms should flexibly adjust the allocation of R&D resources based on market demands and technological developments to ensure sustained competitiveness.

Government and regulatory guidance: Governments and regulatory agencies can promote corporate transparency, especially in R&D-focused companies, through policy incentives. By establishing stricter information disclosure standards, they can guide firms to enhance transparency while increasing investment in innovation activities.

In summary, corporate transparency is a key factor in promoting research and development investment and improving innovation outcomes. Companies should actively enhance their information transparency to secure more external support and drive continuous innovation and development.

REFERENCES

1. Chen H, Zhang M. Corporate transparency, institutional investors, and R&D investment: Evidence from Chinese listed companies. *Journal of Corporate Finance*. 2020; 64:101654. doi:10.1016/j.jcorpfin.2020.101654.
2. Chen Y, Zhang L. The impact of transparency on enterprise innovation: Evidence from Chinese listed companies. *J Innov Manage*. 2020; 18(2):155-169. doi:10.1016/j.jim.2020.02.003.
3. Cormier D, Magnan M. Financial transparency and corporate governance: The role of disclosures in R&D investments. Corp Gov Int Rev. 2020; 28(1):80-96. doi:10.1111/cgir.12405.
4. Cormier D, Magnan M. Research and development expenditures: Impact on financial transparency. *J Bus Financ Account*. 2020; 47(1):113-129.
5. Green J, Li Y, Zhao X. Transparency and firm innovation: Evidence from China. *China Econ Rev*. 2022; 34(2):145-159.
6. Green JC, Kim M, Lee SY. Corporate transparency and its influence on investor confidence: Implications for R&D funding in tech firms*. Int J Financ Innov.* 2022; 37(3):285-300. doi:10.2139/ssrn.3507287.
7. Green L, Wang X, Smith J. Transparency, innovation, and firm value: The role of financial reporting quality. *Accounting and Business Research.* 2022; 52(2):205-230. doi:10.1080/00014788.2021.1942829.
8. International Financial Reporting Standard 10 «Consolidated Financial Statements». URL: https://www.mof.gov.ua/storage/files/МСФЗ_10_ukr_2022.pdf (accessed 22.02.2025).
9. Li Z, Xu B, Zhang Y. Corporate transparency and innovation: Evidence from China's listed companies*. China Econ Rev*. 2020; 64:101-120. doi:10.1016/j.chieco.2019.101530.
10. Li Y, Sun Z, Tang W. Corporate transparency and R&D investments in Chinese listed companies. *J Innov Econ*. 2020; 28(3):78-95.
11. Nazarenko O. Features of formation, consolidation and audit of financial reporting indicators of business entities in the context of international standards. *Transformation of social relations in the context of civilizational changes: a collective monograph*: SG NTM 'New Course', 2023. P. 275-299 URL: https://www.newroute.org.ua/wp-content/uploads/2023/03/mon_27.02.2023.pdf (accessed 22.02.2025)
12. Nazarenko O., Hryb Y. Information support of the financial mechanism of risk management of agricultural enterprises in the conditions of sustainable development. *Agrosvit*. 2024. № 5. pp. 54-60. DOI: 10.32702/2306-6792.2024.5.54.
13. Nazarenko, O. Information support and formation of financial statements by farms in the context of international standards, *Agrosvit*, 2022. vol. 11-12, pp. 12–20. DOI: 10.32702/2306-6792.2022.11—12.12.
14. Panteleyev V., Bezverkhyi K. Consolidation of financial statements of a group of enterprises: theoretical and practical aspects. *Scientific Bulletin of the National Academy of Statistics, Accounting and Audit*. 2014. №3. pp. 28-46. URL: http://194.44.12.92:8080/jspui/handle/123456789/1673 (accessed 10.02.2025).
15. Pham T, Tran V. The impact of corporate transparency on innovation: Agency theory perspective. *Corp Gov Int Rev*. 2021; 29(4):311-326.
16. Pham TH, Tran Q. Corporate governance, transparency, and R&D investment: Evidence from East Asian firms. *Asia Pac J Financ Stud*. 2021; 50(4):467-495. doi:10.1111/ajfs.12302.
17. Pham TN, Tran QH. Corporate transparency and investment efficiency: The role of institutional environment. *Journal of Business Research*. 2021; 132:496-509. doi:10.1016/j.jbusres.2021.04.004.
18. Sun L, Tang Z. The effect of corporate transparency on financing for R&D activities in Chinese high-tech firms. *J Bus Res*. 2020; 118:201-212. doi:10.1016/j.jbusres.2020.06.047.
19. Sun W, Tang J. The role of transparency in firm-level R&D investment decisions. *Asia Pac J Manag*. 2020; 37(2):291-312.
20. Sun Y, Tang Q. The effect of corporate transparency on the financing of R&D projects: Evidence from China's Shenzhen *Stock Exchange. Technovation*. 2020; 94-95:102104. doi:10.1016/j.technovation.2020.102104.
21. Zhao W, Li M, Wang J. Information asymmetry, corporate transparency, and R&D investment: An empirical study of Chinese A-share companies. *Econ Model*. 2021; 101:144-160. doi:10.1016/j.econmod.2021.01.001.
22. Zhao X, Li Y, Gao F. Corporate transparency and R&D investment: Empirical evidence from Chinese A-share listed companies. *China Journal of Accounting Research*. 2021; 14(3):267-290. doi:10.1016/j.cjar.2021.09.003.
23. 23.Zhao Y, Liu F, Xu G. Information asymmetry and R&D investment: A comparative study of Chinese and US firms. *Int Rev Financ Anal*. 2021; 70:101-119.