

# Research on Heterogeneous Information Disclosure of Different Enterprise Types under Industry Competition Pressure—An Analysis Based on Competitive Position, Ownership and Technical Attributes

Shiyao Wang

School of International Business, Dongbei University of Finance and Economics, Dalian 116025, China.

m18841315776@163.com

**Abstract.** Against the backdrop of the restructure of the global economic and trade pattern and the exponential growth of industry competition pressure, information disclosure has become an important strategic measure for enterprises to respond to competition and obtain resources. There are significant heterogeneities in the disclosure strategy choices of different types of enterprises. This paper takes the information disclosure behavior of enterprises under industry competition pressure as the research object, analyzes the correlation logic between competition intensity and enterprise disclosure strategies, explores the differentiated information disclosure characteristics of different types of enterprises from three dimensions: competitive position, ownership nature and technical attribute, and sorts out the future research trends and regulatory suggestions of information disclosure strategies. It is found that the overall information disclosure of enterprises under industry competition pressure is dominated by strategic disclosure and supplemented by authentic disclosure. Enterprises in a highly competitive environment mostly adopt strategic disclosure to maintain competitive advantages, while they pay more attention to authentic disclosure in a low-competition environment or under peer pressure. Enterprises with a high competitive position tend to selectively disclose positive information and conceal negative and core information. State-owned and non-state-owned enterprises adopt different disclosure strategies in different competition modes due to the differences in their business objectives. High-tech enterprises keep strict confidentiality of core technical information and maintain authentic disclosure of non-technical business information. The study also confirms that the enterprise disclosure strategy is not a single choice, but a dynamic trade-off between authenticity and strategicity based on external contexts such as industry competition intensity and competition mode, and this dynamic balance will become the mainstream trend in the future. Finally, differentiated policy suggestions are put forward for different departments such as financial supervision and market supervision, which provide a reference for regulating enterprise disclosure behavior and balancing the development of capital market and industrial innovation.

**Keywords:** Industry competition pressure; Information disclosure; Competitive position; Ownership nature; Technical attribute; Strategic disclosure.

## 1. Introduction

Since the escalation of China-US trade frictions, the global economic and trade landscape has undergone profound restructuring, and competitive barriers in key sectors such as high technology have continued to intensify. Enterprises are not only confronted with the competition for existing market share in the domestic market, but also need to cope with the all-round contest of technology, supply chains and market shares on a global scale. Competition across industries has evolved from a single rivalry of products and prices to a multi-dimensional competition involving technology, capital and brands, leading to an exponential increase in overall industry competition pressure, which has become a critical external constraint affecting enterprise operation and development. As a channel for enterprises to convey operational information to the market and acquire resources, the strategic choice of information disclosure also changes in tandem with the competitive situation. While authentic and standardized information disclosure can alleviate information asymmetry and reduce financing and operational risks, it may also expose the actual operating conditions of enterprises,

making them vulnerable to comparison and imitation by industry peers. In contrast, strategic information disclosure has the potential to help enterprises optimize market expectations and seize short-term competitive advantages. Against this backdrop of mounting industry competition pressure, a core question arises: will enterprises opt for authentic disclosure or strategic disclosure?

This question carries substantial research significance, yet existing literature mostly focuses on the correlational logic between industry competition pressure and enterprise disclosure strategies, with limited attention paid to differentiating the information disclosure strategy choices of diverse types of enterprises under such competitive pressure. This research gap provides a clear entry point for this paper to focus on information disclosure strategy selection under industry competition pressure. Accordingly, this paper conducts an in-depth heterogeneity analysis of enterprise types, and centers on how enterprises with different competitive positions, ownership natures and technical attributes implement information disclosure amid industry competition pressure.

## **2. Information Disclosure Strategies under Industry Competition**

In the market environment with increasingly fierce industry competition, information disclosure has become a vital information transmission mechanism and governance tool for enterprises. Information disclosure under industry competition pressure refers to the behavior that enterprises disclose key information such as operational results and core strategies to the public in light of their own development needs within the competitive landscape of the industry, and it is also an important form of information transmission and signaling for enterprises in a competitive market.

At present, market competition has long shifted from traditional competition in price and scale to diversified dimensions including technological innovation and brand building, and enterprises' strategic choices and operational decisions also differ significantly with varying levels of competition pressure. In this context, information disclosure is not only a basic requirement for enterprises to fulfill regulatory obligations, but also a critical strategic means for them to cope with industry competition and consolidate market advantages. Enterprises will formulate corresponding information disclosure strategies according to different degrees of competition intensity.

In a highly competitive environment, the industry competition becomes increasingly fierce, and the competitive dimensions among enterprises continue to expand to multiple key fields, ranging from proprietary information and core technologies to financing and shareholder concerns. This greatly increases the difficulty of enterprise information disclosure. Once core operational information, financial data, development plans and other contents of an enterprise are made public, they are highly likely to be copied and utilized by competitors, which will further erode the enterprise's market share and competitive advantages, posing a direct threat to its survival and development. Therefore, to effectively cope with multiple competitive pressures and maintain their market positions, enterprises will take the initiative to adjust their information disclosure strategies and adopt various strategic disclosure practices.

In contrast, when the degree of industry competition is low, the number of peer enterprises in the market is small, the competitive landscape is relatively stable, and the regulatory pressure on enterprises is relatively loose. In this case, enterprises conduct information disclosure merely to meet the basic disclosure requirements stipulated by regulatory authorities and ensure orderly internal governance, with no need to adopt additional disclosure strategies to gain market competitive advantages or avoid competitive risks. Under such an environment, enterprises tend to maintain the authenticity of information disclosure. They will not take the initiative to highlight their own advantages or conceal potential risks through selective disclosure, nor will they strategically distort disclosed information to mislead peer enterprises and investors. As a result, their disclosure behaviors are more objective and transparent (Beyer et al., 2010) [1].

Existing relevant literature demonstrates that enterprises adopt differentiated disclosure strategies for diverse purposes when facing industry competition pressure in varying scenarios. Specifically, Matthew T. Billett et al. (2024) [2] focus on the specific scenario where peer firms file IPO

applications: when a rival in the industry initiates an IPO application, incumbent enterprises will strategically manipulate information disclosure by downwardly adjusting their own earnings data, releasing negative management performance forecasts, and adopting a pessimistic disclosure tone. Such practices are intended to deliberately dampen market expectations toward the industry, thereby hindering competitors' IPO financing, mitigating competitive threats from peers, and reducing their own competitive pressure.

Christian Leuz (2016) [3] points out that when confronted with intensified industry competition, strong financing needs and other complex scenarios, enterprises tend to implement selective disclosure proactively to avoid the risk of proprietary information leakage and optimize market expectations. Enterprises prioritize the demands of stakeholders such as institutional investors and analysts, focusing on disclosing information that highlights their own competitive strengths while avoiding negative information related to operations and management. Additionally, some firms adjust their disclosure strategies by benchmarking against peer behaviors to avoid competitive disadvantages.

Luo Kun et al. (2018) [4] further find that in the process of following peer disclosure practices, if there is a significant peer benchmarking gap—meaning a large divergence between a firm's disclosure level and that of leading peer enterprises—the firm may blindly imitate peer disclosure strategies without considering its own actual conditions. This behavior tends to reduce the quality of the firm's information disclosure, making it unable to truly reflect the enterprise's operational status.

Beyond strategic disclosure adopted by enterprises to safeguard competitive advantages under industry competition pressure, peer pressure also exerts a notable impact on disclosure strategies, driving enterprises to truthfully reflect operational conditions and potential risks through information transparency. Chen Haiqiang et al. (2024) [5] find that greater peer pressure brought by newly listed firms under the registration-based system prompts enterprises to choose authentic disclosure strategies. To attract long-term capital and reduce financing costs, these enterprises significantly increase the frequency of voluntary information disclosure and raise the proportion of negative information disclosure, truthfully presenting their operational status and latent risks. This approach effectively improves their market reputation, markedly reduces the risk of stock price crashes, and contributes to the stability of the financial market.

### **3. Summary**

In the increasingly fierce market competition environment, enterprise information disclosure generally presents a trend dominated by strategic disclosure and supplemented by authentic disclosure. As market competition continuously expands to multiple dimensions such as technology and brand building, once core information is disclosed, it is highly vulnerable to imitation and utilization by competitors, posing a direct threat to enterprises' competitive advantages and market positions. Therefore, under high competitive pressure, enterprises usually take the initiative to adopt strategic behaviors such as selective disclosure and differentiated disclosure. These practices aim to protect their own interests, prevent core technologies from being acquired by competitors, consolidate market positions, and hinder the IPO financing process of peer firms. In contrast, enterprises will pay more attention to the authenticity and transparency of information disclosure only when the degree of industry competition is low, the market structure is relatively stable, or they are subject to peer pressure brought by the IPO of new entrants. On the whole, strategic disclosure can help enterprises effectively cope with competitive shocks, optimize market expectations, and consolidate their competitive positions. However, some problems also exist: certain enterprises blindly imitate peer firms, resulting in declined disclosure quality; some even distort information or conceal risks to achieve short-term goals. These practices not only weaken the reliability of information disclosure, but also may mislead investors' judgments and reduce the overall transparency of the market.

## **4. Differentiated Information Disclosure of Different Types of Enterprises under Industry Competition Pressure**

### **4.1. Differences in Enterprises' Industry Competitive Positions**

In a highly competitive industry environment, enterprises exhibit significant differences in information disclosure strategies due to their divergent market competitive positions, which stem from their distinct core competitive demands. As industry leaders with high competitive positions, such enterprises serve as pillars of industrial development relying on advantages in core technologies, market share and other aspects. Nevertheless, under fierce competition, they bear far higher costs of proprietary information disclosure than small and medium-sized enterprises, which directly increases the difficulty of their information disclosure decision-making.

Enterprises with high competitive positions tend to adopt strategic disclosure in most cases to consolidate their market advantages. They pay particular attention to the disclosure of intangible information such as intellectual capital (Fu Chuanrui et al., 2019) [6]. The higher an enterprise's competitive position, the more inclined it is to disclose intangible information like intellectual capital to attract market resources and capital investment, signaling its core competitiveness and development trends to the market. However, these enterprises also worry about the leakage of proprietary technologies and core resources that may be copied by competitors, so they will reduce the disclosure of intellectual capital information to maintain their competitive advantages.

Research by Wang Junwei (2020) [7] shows that enterprises with high competitive positions prefer selective disclosure to enhance the trust of the market and stakeholders and build industrial competitive barriers. These enterprises prioritize the disclosure of positive information, adhering to the principle of "fully disclosing positive information and cautiously concealing negative information". They take the initiative to disclose positive details such as technological advantages and brand value in detail, while concealing negative information including operating losses and poor management as much as possible on the premise of complying with regulatory requirements. This is to avoid the negative impacts of such information on corporate valuation and industry status, thereby stabilizing market position and share. Nonetheless, such strategies often entail more severe potential risks. If corporate defects are exposed or internal negative news leaks out in the later stage, it may lead to reputational damage, declining corporate status and other adverse consequences.

However, not all enterprises with high competitive positions implement strategic information disclosure. Some of them are committed to improving information quality and transparency. Through more proactive and transparent information disclosure, these enterprises convey their risk management capabilities and operational robustness, winning the trust of shareholders and ensuring access to critical financial resources (Sana Saleem, 2025) [8]. Such authentic information disclosure not only alleviates information asymmetry but also restricts management behavior and improves corporate governance levels.

### **4.2. Differences in Enterprise Ownership Nature**

In industry competition, enterprises differ in their purposes of information disclosure due to divergent ownership natures. State-owned enterprises (SOEs) take maximizing social welfare as their core goal, devoting themselves to fulfilling public responsibilities such as safeguarding people's livelihood, implementing national policies and filling market gaps. In contrast, non-state-owned enterprises (non-SOEs) aim to maintain their own survival and achieve operational profits (Matsui, 2014) [9]. Owing to the disparate disclosure objectives of enterprises with different property right natures, they also present distinct differences in selecting information disclosure strategies.

Existing literature indicates that under industry competition pressure, varying specific market scenarios further highlight the differences in disclosure strategies and approaches between the two types of enterprises. Under the Cournot competition model (where enterprises compete through output, determine output independently, and the product price is finally set based on total market supply and demand) with cost uncertainty, SOEs take the initiative to disclose cost information. By

sending signals of high costs, SOEs induce non-SOEs to increase output supply targetedly, thereby raising the total market output and boosting consumer surplus, which is highly consistent with the core objectives of SOEs (Matsui, 2014) [9]. For non-SOEs, disclosing low-cost information will prompt SOEs to reduce output proactively to optimize the efficiency of social resource allocation, transferring more market demand to non-SOEs with superior production efficiency. This reduces the production cost of the entire industry and forms a positive incentive (Matsui, 2014) [9]. The complete and complementary disclosure behaviors of the two types of enterprises create synergistic advantages, ultimately forming an optimal disclosure strategy that achieves coordinated optimization of social welfare and individual corporate interests.

In the Bertrand competition model (where enterprises compete by directly setting product prices, consumers prioritize products with lower prices, and the final market price approaches marginal cost), SOEs choose not to disclose any information resolutely to prevent non-SOEs from using disclosed information to raise prices arbitrarily and harm consumer interests (Matsui, 2014) [9]. Meanwhile, the fiercer the industry competition, the higher the probability that SOEs disclose social responsibility information, and this trend is more significant in SOEs with lower managerial power and more standardized internal governance (Tan Xue, 2017) [10]. Non-SOEs exhibit the opposite strategic logic: they actively disclose information regardless of cost or demand uncertainty, and boost their own profits by inducing SOEs to adjust prices (Matsui, 2014) [9]. In summary, the differences in information disclosure strategies between SOEs and non-SOEs stem from the divergent goals brought by ownership nature, coupled with the impacts of competition modes and market uncertainty, which ultimately lead to their differentiated disclosure choices.

### **4.3. Differences in Enterprise Technical Attributes**

In the knowledge- and technology-driven market environment, the core competitiveness of high-tech enterprises stems from continuous technological innovation and R&D investment. Compared with ordinary enterprises, they face greater pressure of technological iteration, higher R&D investment, and higher risks of technology plagiarism. Therefore, the choice of information disclosure strategies for such enterprises is not only related to market share, but also directly affects the technological strategic landscape, forcing high-tech enterprises to strike a balance between meeting investor expectations and protecting technical confidentiality.

Under industry competition pressure, competition among ordinary enterprises mostly concentrates on dimensions such as price and sales channels, with low competitive sensitivity of disclosed information. In contrast, as leaders in advanced technologies within the industry, high-tech enterprises have to tackle multiple challenges, including avoiding proprietary costs, protecting core technological barriers, preventing competitors from plagiarism and "overtaking by curve", guarding against the turnover of core technical talents, and mitigating market share erosion (Sean Cao, 2018) [11]. Since technological innovation is the core competitiveness of high-tech enterprises, and the proprietary costs of relevant disclosures are the highest, such enterprises prioritize responding to technological competition over other competitive dimensions such as price and channels.

Existing research concludes that under competitive pressure, high-tech enterprises only adopt a cautious attitude toward core information directly related to technological competition, such as R&D progress and technological breakthroughs, while maintaining conventional and authentic disclosure strategies for non-technical information (e.g., general operation and profitability information) that is not affected by the intensity of technological competition (Gonçalo Pacheco-de-Almeida, 2012) [12]. High-tech enterprises adopt such a balanced and dynamic disclosure strategy, aiming to not only protect their core advanced technologies and curb peer competition, but also obtain external financial benefits.

When competitors invest in R&D simultaneously, high-tech enterprises can take the initiative to disclose non-core technical information to reduce rivals' imitation costs, prompting them to shift from "concurrent R&D" to "imitation and following", thereby slowing down the pace of industrial innovation and maintaining their own advantages. Alternatively, when technology is in a critical R&D

stage, strict restrictions on the disclosure of core information are necessary to prevent peer plagiarism. In this case, only qualitative descriptions can be disclosed without revealing specific data or technological strategies, so as to safeguard their own technological security and market share.

## **5. Summary**

Under industry competition pressure, information disclosure strategies of different types of enterprises present obvious discrepancies, which are generally dominated by strategic disclosure, while authentic disclosure only occurs under specific conditions. From the perspective of industry competitive position, enterprises with high competitive positions usually tend to adopt strategic disclosure. They selectively disclose positive information and conceal negative information as well as core technical information to consolidate their industrial advantages, and only a small number of enterprises choose authentic disclosure to improve corporate governance and gain stakeholder trust. In terms of ownership nature, enterprises with different property right natures have divergent operational objectives and face distinct competition modes. State-owned enterprises prefer authentic disclosure, while non-state-owned enterprises tend to adopt strategic disclosure to guide competitors' decision-making and maximize their own profits. Regarding technical attributes, high-tech enterprises generally adopt balanced strategic disclosure. They keep strict confidentiality and cautious disclosure of key information such as R&D progress and core technologies, and only maintain conventional authentic disclosure for non-technical operational information, so as to strike a balance between technical confidentiality and financing demands. In contrast, ordinary enterprises have lower information sensitivity, so their disclosure strategies are closer to authentic disclosure.

## **6. Research Trends: Dynamic Trade-off Between Authentic and Strategic Information Disclosure**

This paper systematically sorts out the differentiated impacts of internal and external pressures on enterprise disclosure behaviors, and conducts an in-depth analysis of the disclosure strategies of different types of enterprises under market competition pressure. It is found that the information disclosure choices of most enterprises under industry competition pressure are not limited to single authentic disclosure or strategic disclosure. Instead, enterprises adjust their disclosure strategies dynamically based on multi-dimensional factors and external contexts including industry competition intensity, competition modes and development stages, making a dynamic trade-off between authenticity and strategicity of information disclosure. For state-owned enterprises that hold a leading competitive position in the industry, possess remarkable technological characteristics, and aim to promote social welfare, they only conduct qualitative disclosure of core technology-related data, while choosing authentic disclosure for conventional data such as regular operating losses. Meanwhile, they focus on highlighting positive information including core technologies and social responsibilities, balancing multiple missions such as consolidating leading industrial status, protecting technical secrets and enhancing social welfare. In contrast, non-state-owned enterprises with similar competitive positions and technical attributes do not take social welfare as their core goal, but prioritize maximizing their own interests. Although they also adopt vague disclosure strategies for core R&D information, they implement strategic disclosure even for general operating information. In some extreme cases, they will deliberately dampen industry expectations to consolidate their leading position in the industry. For non-state-owned high-tech enterprises with low and medium competitive positions in the industry, they lack the market discourse power of industry leaders yet need to stick to technological innovation as their core competitiveness. Such enterprises form differentiated disclosure strategies when facing losses: they strictly keep confidential the core data and details of R&D-related losses with only general qualitative explanations, and choose authentic disclosure for conventional operating losses. At the same time, they focus on strengthening positive information related to technological value, R&D achievements and financing, so as to seek

a balance between protecting technical secrets and meeting external financing needs, ensuring the sustainable progress of corporate R&D and operation. From the perspective of future development trends, with the continuous intensification of market competition and increasingly diversified complex situations faced by enterprises, complex market scenarios derived from different internal and external pressures and their combinations will emerge constantly. Pure authentic disclosure is difficult to cope with fierce market competition, while extreme strategic disclosure will face higher regulatory and reputational risks. Against this backdrop, the dynamic balance between authenticity and strategic disclosure will become the mainstream trend of enterprise information disclosure strategies in the future (Claudia Arena, 2021) [13]. Such a dynamically balanced disclosure strategy requires enterprises to adhere to the bottom line of authenticity in information disclosure, and also enables them to flexibly adjust disclosure strategies according to changes in internal and external environments. There are still many research directions worthy of in-depth exploration regarding the underlying influencing mechanisms, applicable scenarios and implementation effects, which holds great theoretical and practical research potential.

## **7. Differentiated Policy Recommendations for Different Departments**

Financial regulatory authorities (including the China Securities Regulatory Commission and stock exchanges) should firmly uphold the principle of authentic disclosure, improve the information disclosure rules of the capital market, and clarify enterprises' obligations to truthfully disclose core financial, operational and risk-related information. They need to strictly investigate illegal strategic disclosure practices in scenarios such as IPOs, intensify penalties for false disclosure, link the quality of authentic disclosure to financing examination, bond issuance and other links, and enhance the information transparency of the capital market. Market regulatory authorities (the State Administration for Market Regulation) shall define the legal boundary of strategic disclosure, protect enterprises' reasonable and prudent disclosure for safeguarding trade secrets and core technologies, and severely crack down on unfair competition acts conducted through false disclosure and malicious negative information. This aims to balance fair market competition and the autonomy of enterprises' operational strategies. Science and technology authorities (including the Ministry of Industry and Information Technology and the Ministry of Science and Technology) should prioritize the value of technology-oriented strategic disclosure, issue special guidelines for information disclosure of high-tech enterprises, and allow qualitative disclosure only for core R&D data and patent layout of such enterprises. They are also supposed to build a shared platform for generic industrial technologies, and strengthen the investigation and punishment of technology plagiarism to protect enterprises' innovative achievements. Development and reform authorities (the National Development and Reform Commission) need to coordinate the value of authentic and strategic disclosure, guide enterprises to truthfully disclose core data such as industrial capacity and market demand to provide an accurate basis for macro-control and industrial planning. Meanwhile, they should respect the disclosure differences among various industries and enterprises, promote the adaptation of disclosure strategies to industrial upgrading and regional economic development, and realize the coordinated progress of macroeconomic development and enterprise market competition.

## **8. Conclusion**

This paper focuses on the research of enterprise information disclosure strategies under industry competition pressure, analyzes the logic of disclosure choices under different competitive situations, and reveals the differentiated disclosure characteristics of different types of enterprises from the dimensions of competitive position, ownership nature and technical attributes. It verifies that enterprise disclosure strategies represent a dynamic trade-off between authenticity and strategic disclosure. The study finds that strategic disclosure dominates in highly competitive environments, while authentic disclosure is valued more in low-competition environments or under peer pressure.

Different types of enterprises have focused disclosure choices due to divergent operational objectives and competitive demands. In the future, enterprise information disclosure will tend to adopt a dynamically balanced strategy. The differentiated supervision and guidance of various government departments will set boundaries and reserve development space for enterprise disclosure behaviors, facilitating the achievement of the dual goals of capital market standardization and industrial innovation and development.

## References

- [1] Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature[J]. *Journal of Accounting and Economics*, 50(2-3), 296-343.
- [2] Billett, M. T., Ma, M., & Yu, X. (2024). Torpedo Your Competition: Strategic Reporting and Peer Firm IPO[J]. *The Accounting Review*. <https://doi.org/10.2308/TAR-2022-0496>.
- [3] Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research[J]. *Journal of Accounting Research*, 54(2), 525-622.
- [4] Luo, K., & Sang, Z. Y. (2018). Does pressure turn into motivation? — A study on the relationship between peer benchmarking gap, CEO external pressure and accounting information quality[J]. *Journal of East China Normal University (Philosophy and Social Sciences Edition)*, 50(3), 126-138.
- [5] Chen, H. Q., Ni, B., Song, M. Q., et al. (2024). The peer effect of information disclosure promotes financial market stability — An empirical study based on the information disclosure reform of the ChiNext registration system[J]. *China Economic Quarterly*, 24(5), 1673-1700.
- [6] Fu, C. R., & Yang, W. H. (2019). Product market competition, competitive position and intellectual capital information disclosure — A large-sample study based on China's listed companies' Intellectual Capital Disclosure Index (ICDI)[J]. *Journal of Graduate School of Chinese Academy of Social Sciences*, (4), 13-30.
- [7] Wang, J. W. (2020). Research on the economic consequences of selective disclosure of internal control weaknesses — "Effective cover-up" or "Not worth the loss"?[J]. *On Economic Problems*, (12), 81-89.
- [8] Saleem, S., Usman, M., & Akhtar, M. N. (2025). Does competitive position matter: Investigating the impact of information risk on COE and corporate investment[R]. *Research Papers in Economics (RePEC)*.
- [9] Matsui, A. (2014). Disclosure Policy in a Mixed Market[J]. *Economics Letters*, 125(3), 401-404.
- [10] Tan, X. (2017). Industry competition, property right nature and corporate social responsibility information disclosure[J]. *Industrial Economics Research*, (3), 15-27.
- [11] Cao, S. S., Tucker, J. W., Wan, C., et al. (2018). Technological Peer Pressure and Product Disclosure[J]. *The Accounting Review*, 93(6), 95-126.
- [12] Pacheco-de-Almeida, G., & Zemsky, P. (2012). Some like it free: Innovators' strategic use of disclosure to slow down competition[R]. *SSRN Electronic Journal*. <https://ssrn.com/abstract=2025367>.