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-RESEARCH ARTICLE-

REGULATORY PRESSURE AND PROACTIVE ESG COMPLIANCE MANAGEMENT IN CHINESE LISTED FIRMS: THE ROLES OF SANCTION CERTAINTY AND LAW-COMPLIANT LEADERSHIP

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─Abstract─

As China's sustainability disclosure framework progressively moves from voluntary reporting towards mandatory requirements, understanding how firms translate external regulatory obligations into internal compliance practices has become increasingly important. Against this backdrop, the present study examines the relationship between regulatory pressure and proactive compliance management among Chinese listed manufacturing companies, considering perceived sanction certainty as a mediating mechanism and law-compliant leadership behaviour as a moderating influence. Integrating institutional theory, deterrence theory, and social learning theory, the

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research develops and empirically evaluates a moderated mediation model. The study adopts a quantitative, cross-sectional research design to examine proactive ESG compliance management among Chinese listed manufacturing firms, focusing on regulatory pressure, perceived sanction certainty, and law-compliant leadership behaviour.The proposed relationships were assessed using partial least squares structural equation modelling (PLS-SEM) through SmartPLS. The empirical results demonstrate that regulatory pressure positively influences both perceived sanction certainty ($\beta = .450$, $p < .001$) and proactive compliance management ($\beta = .276$, $p < .001$). Perceived sanction certainly also exhibits a significant positive association with proactive compliance management ($\beta = .458$, $p < .001$), while partially transmitting the influence of regulatory pressure on compliance practices (indirect $\beta = .206$, $p < .001$). Furthermore, law-compliant leadership behaviour directly enhances proactive compliance management ($\beta = .268$, $p < .001$) and amplifies the positive relationship between perceived sanction certainty and proactive compliance management (interaction $\beta = .158$, $p < .001$). The explanatory capacity of the model accounts for 20.3% of the variance in perceived sanction certainty and 58.4% of the variance in proactive compliance management. These findings advance the literature on mandatory ESG disclosure by clarifying the behavioural mechanism through which external regulatory demands foster proactive organisational compliance and demonstrating how leadership conduct strengthens this process.

Keywords: Mandatory ESG Disclosure, Regulatory Pressure, Perceived Sanction Certainty, Proactive Compliance Management, Law-Compliant Leadership, China, PLS-SEM.

INTRODUCTION

Environmental, social, and governance (ESG) disclosure has undergone a substantial transformation, evolving from a largely voluntary mechanism of corporate communication into an increasingly regulated practice intended to improve transparency, accountability, and information comparability within capital markets. The economic rationale for mandatory disclosure arises partly from information asymmetry, whereby corporate managers possess greater knowledge of environmental liabilities, social exposures, governance arrangements, and sustainability-related opportunities than investors and other stakeholders. Without standardised reporting requirements, external parties face considerable difficulties in obtaining consistent and comparable information about these matters (Healy & Palepu, 2001; Leuz & Wysocki, 2016).

Accordingly, disclosure regulation is intended not only to reduce information-related inefficiencies but also to influence corporate conduct by strengthening oversight, documentation, and accountability concerning sustainability matters previously addressed at managerial discretion. Empirical research indicates that compulsory non-financial and ESG reporting can reshape corporate social responsibility (CSR)

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activities, investor responses, market liquidity, and internal reporting procedures, with consequences extending beyond the publication of additional information (Fiechter et al., 2022; Grewal, 2019; Jackson et al., 2020; Krueger et al., 2024). Nevertheless, these outcomes are neither automatic nor uniform. Their extent depends on enforcement practices, materiality criteria, institutional complementarities, and organisational incentives. In particular, the credibility of enforcement and the design of regulatory requirements influence whether mandatory disclosure produces meaningful changes in corporate practices or remains primarily a reporting obligation (Christensen et al., 2021; Frankel et al., 2025).

China provides a particularly relevant setting for examining these developments because its sustainability disclosure framework is undergoing a substantial institutional transition. In April 2024, the Shanghai and Shenzhen stock exchanges introduced sustainability reporting guidelines (Shanghai Stock, 2024; Shenzhen Stock, 2024), while the Ministry of Finance and other relevant authorities issued the Corporate Sustainability Disclosure Standards—Basic Standard (Trial) in April 2024 (Ministry of Finance of the People's Republic of China, 2024). This regulatory evolution builds upon China's earlier experience with CSR reporting requirements, which have already been associated with changes in corporate behaviour and social externalities. More recent Chinese evidence further suggests that disclosure regulations, internal control mechanisms, listing arrangements, and assurance practices influence both ESG reporting quality and corporate ESG performance (Chen & Zou, 2025; Cheng et al., 2024; Sun et al., 2024; Yan et al., 2024). These developments are especially consequential for listed manufacturing companies, whose sustainability obligations encompass emissions management, occupational health and safety, product responsibility, supply-chain exposure, resource consumption, and the coordination of complex non-financial information systems.

The significance of this regulatory transformation extends considerably beyond the formal obligation to publish sustainability reports. Effective compliance with mandatory ESG disclosure requirements involves identifying material sustainability matters, maintaining verifiable supporting evidence, allocating organisational responsibilities, establishing reliable data controls, monitoring regulatory developments, and ensuring that reported information is accurate, complete, and adequately substantiated. Sustainability reporting scholarship has long recognised that reporting credibility depends on more than the existence of disclosure procedures. Materiality assessment, stakeholder participation, governance structures, and organisational transformation have consistently been identified as important determinants of reporting effectiveness (Adams & McNicholas, 2007; Beske et al., 2020; Eccles et al., 2012; Manetti, 2011).

However, mandatory reporting may also expose weaknesses in existing governance arrangements or encourage the institutionalisation of procedural compliance without

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corresponding improvements in management practices, particularly when reporting functions operate independently of operational decision-making (Aureli et al., 2020; Cho et al., 2015). Such concerns are especially pertinent to China's emerging regulatory environment, where exchange-level requirements, national standards, and evolving guidance concerning materiality and disclosure procedures interact. Consequently, the central organisational challenge is no longer confined to demonstrating compliance after reporting obligations arise. Rather, it concerns whether firms can establish proactive compliance management systems capable of anticipating regulatory risks, identifying potential deficiencies, monitoring compliance activities, and implementing corrective measures before disclosure failures or regulatory breaches occur.

This challenge carries economic and operational significance for manufacturing enterprises because their activities lie at the intersection of capital-market disclosure obligations and operational sustainability responsibilities. Unlike predominantly service-oriented organisations, listed manufacturers must coordinate securities reporting with environmental permitting, production records, workplace safety obligations, product standards, and supplier-related information. The reliability of externally disclosed ESG information therefore depends on how effectively operational data are collected, verified, communicated to senior management, and incorporated into corporate reporting systems. Previous research highlights the importance of integrating materiality considerations and internal governance arrangements into sustainability reporting to strengthen its credibility across organisational contexts (Eccles et al., 2012; Rupley et al., 2012). Conversely, fragmented reporting structures and weak connections between disclosure functions and operational management may create conditions that facilitate selective reporting (Cho et al., 2015; Lyon & Maxwell, 2011). Examining proactive compliance management within manufacturing firms therefore provides an opportunity to investigate the organisational capabilities and internal arrangements through which mandatory ESG disclosure requirements may be translated into credible and sustained governance practices.

From a theoretical perspective, responding to disclosure requirements and developing proactive compliance capabilities represent distinct organisational processes. Institutional theory suggests that external regulatory expectations can encourage organisational conformity while simultaneously allowing firms to adopt different strategic responses. Where formal structures remain weakly connected to everyday organisational activities, compliance arrangements may serve predominantly ceremonial or legitimacy-oriented purposes rather than generate substantive behavioural change (DiMaggio, 1983; Meyer John & Rowan, 1977; Oliver, 1991). Related research on environmental management demonstrates that regulatory and institutional pressures can stimulate environmental strategies, organisational innovation, and improved management practices. However, the extent of these responses is shaped by managerial interpretations, organisational resources, and commitment to environmental objectives (Bansal & Clelland, 2004; Berrone et al.,

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2013; Sharma, 2000). Evidence from Chinese enterprises similarly indicates that governmental intervention and institutional expectations can encourage environmental management initiatives and green innovation (Zeng et al., 2022; Zhou et al., 2023). Although these findings establish the importance of regulatory pressure, they provide a less complete explanation of the internal behavioural processes through which such pressure encourages firms to develop proactive compliance management specifically in the context of ESG disclosure.

Deterrence theory provides a complementary explanation by directing attention towards organisational perceptions of regulatory enforcement. Corporate responses to regulation are influenced not merely by the existence of legal obligations or the potential severity of penalties, but also by assessments of how likely non-compliance is to be detected and sanctioned. A substantial body of research distinguishes sanction certainty from sanction severity and identifies perceived sanction certainty as an important determinant of compliance behaviour (Braithwaite & Makkai, 1991; Kuperan & Sutinen, 1998; May, 2005; Paternoster, 1987; Thornton et al., 2005; Winter & May, 2001). Within mandatory ESG disclosure, regulatory pressure may heighten managerial awareness that incomplete reporting, misleading representations, inadequate internal controls, or failures to satisfy disclosure obligations could attract supervisory scrutiny and regulatory consequences. Such perceptions may encourage organisations to move beyond reactive compliance by investing in monitoring procedures, employee training, documentary controls, internal reviews, and corrective mechanisms. Perceived sanction certainty may therefore constitute an important explanatory pathway connecting external regulatory demands with proactive internal compliance practices. Despite its theoretical relevance, this mechanism has received comparatively limited attention in ESG disclosure research, where empirical investigations have predominantly examined reporting quality, financial-market consequences, environmental outcomes, and investment-related effects.

A further issue concerns the role of leadership in determining whether regulatory expectations become embedded in organisational behaviour. Externally imposed compliance requirements do not necessarily develop into established internal routines, particularly when employees perceive compliance as a procedural obligation rather than a managerial priority. Research examining corporate ethics programmes indicates that visible managerial commitment helps distinguish genuinely integrated compliance arrangements from symbolic initiatives that remain disconnected from organisational practice (Weaver, 1999). Similarly, ethical leadership scholarship demonstrates that leaders influence organisational ethical climates, employee conduct, and the occurrence of misconduct through behavioural modelling, reinforcement, and social learning processes (Brown et al., 2005; Ng & Feldman, 2015). Meta-analytical findings further support the distinct contribution of ethical leadership to important organisational outcomes (Bedi et al., 2015; Ng & Feldman, 2015). Complementary evidence from behavioural ethics research indicates that organisational culture and managerial signals

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can shape employees' willingness either to justify inappropriate conduct or to resist unethical practices (Kaptein, 2008; Kish-Gephart, 2010; Moore et al., 2012; Treviño et al., 2006). Applied to regulatory compliance, these insights suggest that law-compliant leadership behaviour may directly encourage proactive compliance management while also influencing whether awareness of likely sanctions translates into concrete organisational action. Leadership may consequently strengthen the behavioural effects of perceived sanction certainty rather than merely operate as an independent determinant of compliance.

Taken together, the existing literature reveals four interrelated research gaps. First, scholarship on mandatory sustainability disclosure has concentrated primarily on capital-market implications, environmental consequences, and reporting outcomes, leaving proactive compliance management comparatively underexplored as a distinct organisational response to regulatory requirements (Christensen et al., 2021; Fiechter et al., 2022; Krueger et al., 2024; Xue et al., 2024). Second, investigations of institutional pressure have generally emphasised organisational commitment, capabilities, innovation, and legitimacy, providing limited insight into perceived sanction certainty as a behavioural mechanism through which regulatory demands influence proactive compliance practices (Buysse & Verbeke, 2003; Siyal et al., 2023).

Third, although leadership is widely recognised as fundamental to organisational ethics and compliance (E&C), empirical understanding remains limited regarding its moderating role in strengthening the relationship between perceived enforcement certainty and proactive compliance behaviour. Fourth, existing Chinese ESG research has relied substantially on archival evidence concerning disclosure practices, corporate performance, financing decisions, and internal controls. Survey-based investigations involving organisational personnel directly familiar with compliance responsibilities can therefore offer complementary insights into how regulatory requirements are interpreted by managers and subsequently incorporated into operational practices (Chen & Zou, 2025; He & Ismail, 2024; Yan et al., 2024; Yuan et al., 2022).

Against this background, the present study addresses two central research questions: How do regulatory pressure and perceived sanction certainty influence the development of proactive compliance management among Chinese listed manufacturing companies? Under what leadership conditions are the effects of regulatory pressure and perceived sanction certainty on proactive compliance management strengthened? To address these questions, the investigation pursues the following objectives: (1) to assess the effects of regulatory pressure on perceived sanction certainty and proactive compliance management; (2) to determine whether perceived sanction certainty mediates the relationship between regulatory pressure and proactive compliance management; (3) to evaluate the direct influence of law-compliant leadership behaviour on proactive compliance management; and (4) to establish whether law-compliant leadership behaviour strengthens the association between perceived sanction certainty and

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proactive compliance management. The study makes three principal contributions to the existing literature. First, it extends ESG disclosure scholarship beyond the examination of formal compliance and reporting outcomes by considering proactive organisational action as a substantive response to regulatory requirements. Second, it introduces a deterrence-based explanatory mechanism that clarifies how regulatory pressure may be translated into internal compliance initiatives through perceived sanction certainty. Third, it positions law-compliant leadership behaviour as a theoretically grounded boundary condition that influences the effectiveness of this behavioural mechanism. By integrating these perspectives, the research connects the institutional and legal evolution of China's ESG disclosure framework with the internal organisational processes that may determine whether emerging regulatory obligations become embedded in substantive governance practices or remain confined to formal reporting procedures.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Foundations

The conceptual framework integrates institutional theory, deterrence theory, and social learning theory to explain how external regulatory demands influence internal organisational compliance practices. Institutional theory establishes the foundation for understanding corporate responses to coercive pressures arising from legislation, stock exchange requirements, and regulatory expectations. Organisations seek legitimacy by aligning their practices with institutionalised norms and expectations; however, such alignment may involve genuine operational adjustments or merely symbolic adoption of formally acceptable structures (DiMaggio, 1983; Meyer John & Rowan, 1977; Suchman, 1995). The variation in these responses is further explained by the nature and intensity of institutional demands, which can produce different organisational strategies rather than a uniform pattern of conformity (Oliver, 1991). Within environmental and sustainability management, empirical evidence associates institutional pressures with the adoption of proactive environmental strategies, technological innovation, and improvements in management practices (Berrone et al., 2013). These theoretical and empirical insights establish regulatory pressure (RP) as the principal external antecedent within the proposed framework.

Deterrence theory complements this institutional perspective by explaining the cognitive mechanism through which regulatory obligations acquire behavioural significance. A central distinction in deterrence research concerns the perceived probability of detecting and penalising violations compared with the severity of the penalties imposed. Previous empirical investigations and theoretical assessments suggest that severe sanctions may have limited deterrent effects when regulated actors consider detection or punishment unlikely (Braithwaite & Makkai, 1991; Paternoster, 1987; Thornton et al., 2005). Research examining environmental regulation similarly

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demonstrates that organisational compliance responses are shaped by monitoring arrangements, enforcement credibility, perceived legitimacy, and managerial interpretations of regulatory oversight (Gunningham et al., 2004; Kuperan & Sutinen, 1998; May, 2005; Winter & May, 2001). Consequently, regulatory requirements may encourage preventive organisational action when managers believe that violations are likely to be identified and subjected to enforcement measures. This reasoning positions perceived sanction certainty (PSC) as the mediating mechanism through which RP can influence proactive compliance management (PCM), connecting externally imposed obligations with internally motivated compliance practices.

Social learning theory provides the theoretical basis for examining the influence of leadership on organisational compliance behaviour. Employees and managers develop expectations about acceptable conduct by observing leadership decisions, behavioural examples, organisational rewards, and responses to misconduct. Within this perspective, ethical leadership encompasses the demonstration of normatively appropriate interpersonal conduct and decision-making practices (Brown et al., 2005). Subsequent research indicates that leadership influences ethical behaviour across organisational levels, contributes to the development of an ethical organisational climate, and reduces the occurrence of misconduct. Although closely related to ethical leadership, law-compliant leadership behaviour (LCLB) represents a more specifically defined construct concerned with leaders' observable commitment to legal obligations, appropriate responses to violations, provision of compliance-related guidance, and adherence to legal requirements in organisational decisions. Both constructs operate through comparable social learning mechanisms, whereby leaders communicate behavioural expectations and reinforce their practical importance through observable actions. Accordingly, LCLB is expected to exert a direct positive influence on PCM while also strengthening the extent to which PSC encourages proactive organisational compliance. Leadership is therefore conceptualised as both an independent predictor of PCM and a moderating influence on the relationship between PSC and PCM.

Figure 1 presents the proposed conceptual framework, in which RP functions as the exogenous variable, PSC serves as the mediator, and PCM constitutes the principal endogenous outcome. LCLB is incorporated as a direct antecedent of PCM and as a moderator of the PSC→PCM relationship. This configuration distinguishes three complementary mechanisms: externally imposed institutional demands represented by RP, managerial perceptions of enforcement likelihood captured by PSC, and internal behavioural reinforcement provided through LCLB. By integrating these mechanisms, the framework explains how regulatory expectations may be translated into preventive compliance activities and how leadership can influence the strength of this process. The model is particularly relevant to China's transition towards mandatory ESG disclosure, where increasingly formalised reporting obligations raise important questions about their integration into established governance arrangements and compliance routines. It consequently provides a theoretical basis for examining whether regulatory

developments encourage substantive organisational adaptation or remain largely disconnected from internal management practices.

Regulatory Pressure and Perceived Sanction Certainty

Regulatory pressure (RP) encompasses the external constraints and expectations imposed on organisational decision-making through legislation, regulatory provisions, supervisory requirements, and enforcement mechanisms. Within sustainability management, such pressures have consistently been associated with stronger environmental governance and increased innovation. Empirical evidence suggests that institutional and regulatory demands encourage organisations to strengthen environmental management systems, pursue green innovation, and adopt strategic responses, particularly when operating under heightened regulatory scrutiny or within environmentally sensitive settings (Zeng et al., 2022). Sector-specific disclosure requirements may further contribute to improvements in ESG performance by increasing information comparability, intensifying competitive pressures, and strengthening external monitoring (Chen & Zou, 2025). Collectively, these findings suggest that changes in the regulatory environment extend beyond the introduction of formal obligations, influencing how managers interpret supervisory expectations and anticipate potential enforcement consequences.

Deterrence theory provides an explanation for why increasing RP may strengthen perceptions that regulatory violations will be detected and sanctioned. As ESG disclosure frameworks become more comprehensive, standardised reporting obligations, documentary evidence requirements, governance responsibilities, and procedural controls expand the range of organisational activities subject to external examination. Consequently, stock exchanges, regulatory authorities, auditors, investors, and other monitoring bodies gain additional opportunities to identify reporting inconsistencies and potential compliance deficiencies. Under these conditions, selective disclosure and inadequately substantiated sustainability claims may become increasingly difficult to sustain, consistent with research linking external scrutiny to constraints on greenwashing and selective reporting practices (Delmas & Burbano, 2011; Lyon & Maxwell, 2011; Marquis et al., 2016). Furthermore, the effectiveness of mandatory disclosure requirements depends substantially on the credibility and implementation of associated monitoring and enforcement arrangements (Christensen et al., 2021; Krueger et al., 2024). Firms experiencing greater regulatory scrutiny may therefore develop stronger expectations that non-compliance with ESG obligations will attract regulatory intervention. Accordingly, heightened RP is expected to increase perceived sanction certainty (PSC).

H1: *Regulatory pressure has a positive effect on perceived sanction certainty among Chinese listed manufacturing firms.*

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Regulatory Pressure and Proactive Compliance Management

Proactive compliance management (PCM) refers to a preventive organisational approach through which potential regulatory risks are identified, compliance obligations are communicated, implementation processes are systematically monitored, and emerging deficiencies are addressed before violations occur. Unlike reactive compliance, which primarily involves responding to established breaches and implementing subsequent remedial measures, PCM emphasises continuous oversight and early intervention. Institutional research suggests that coercive pressures can encourage meaningful organisational adjustments, particularly when regulatory expectations are reinforced by external monitoring and potential consequences for organisational legitimacy (Bansal, 2005; Buysse & Verbeke, 2003). Evidence from China's environmental regulatory environment similarly indicates that regulatory interventions can encourage firms to strengthen environmental management practices and pursue green innovation rather than merely incur additional compliance-related costs (Zhou et al., 2023).

The sustainability reporting literature provides further support for the relationship between external regulatory demands and internal organisational adaptation. Mandatory non-financial disclosure requirements have been associated with changes in organisational procedures, greater participation by internal auditors, and substantive corporate social responsibility initiatives (Aureli et al., 2020; Fiechter et al., 2022). Research involving Chinese listed companies also identifies a positive association between internal control mechanisms and ESG disclosure (Yan et al., 2024), alongside a positive correlation between ESG disclosure and financial irregularities (Yuan et al., 2022). Collectively, these findings suggest that external reporting obligations may influence the development and operation of internal compliance arrangements, although the nature of these relationships requires careful interpretation. For Chinese listed manufacturing companies, implementing ESG disclosure requirements involves coordinating responsibilities across environmental management, labour practices, supply-chain operations, and securities reporting. Meeting these interconnected obligations requires structured compliance planning, ongoing monitoring, employee training, periodic reviews, and timely corrective measures. Greater RP may therefore encourage manufacturers to institutionalise these preventive practices, strengthening PCM as an integral component of organisational governance.

H2: *Regulatory pressure has a positive effect on proactive compliance management among Chinese listed manufacturing firms.*

Perceived Sanction Certainty and Proactive Compliance Management

Perceived sanction certainty (PSC) reflects the extent to which organisational decisionmakers believe that regulatory non-compliance is likely to be detected and

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followed by enforcement measures. Within deterrence theory, the anticipated probability of detection and punishment represents an important consideration shaping decisions to comply with established requirements. Research on corporate deterrence demonstrates that managerial perceptions of enforcement influence organisational conduct, although their effects also interact with regulatory legitimacy, prevailing social expectations, and managerial values (Braithwaite & Makkai, 1991; Gunningham et al., 2004; Thornton et al., 2005). Similarly, environmental compliance studies emphasise that the perceived credibility of regulatory inspections, monitoring arrangements, and enforcement procedures can substantially influence organisational motivation to fulfil legal obligations (May, 2005; Winter & May, 2001).

Mandatory disclosure requirements introduce potential legal, reputational, and market-related consequences for reporting deficiencies, thereby increasing the organisational value of preventive compliance measures. When managers recognise that incomplete disclosures, inadequately supported claims, or unreliable reporting practices may attract regulatory scrutiny, investments in internal compliance capabilities become more justifiable. Under these circumstances, PCM can function as a preventive mechanism through which firms establish clear accountability structures, strengthen employee awareness, monitor information flows, maintain documentary evidence, and address reporting weaknesses before they develop into regulatory violations. The effectiveness of such arrangements, however, depends partly on the extent to which legal expectations are incorporated into everyday organisational activities. Research indicates that regulatory environments can influence the establishment and effectiveness of corporate self-regulatory systems, with formal compliance arrangements becoming more consequential when legal requirements meaningfully shape managerial practices (Parker & Nielsen, 2009). Conversely, compliance structures that remain disconnected from operational decision-making may serve predominantly symbolic purposes rather than produce substantive organisational change (Short & Toffel, 2010). These considerations suggest that stronger PSC may encourage firms to move beyond procedural conformity towards systematic and anticipatory compliance management.

H3: *Perceived sanction certainty has a positive effect on proactive compliance management among Chinese listed manufacturing firms.*

Mediating Role of Perceived Sanction Certainty

Beyond its direct influence on PCM, RP may also shape organisational compliance practices indirectly by altering managerial perceptions of enforcement likelihood. Regulatory requirements can influence how decisionmakers assess the probability that violations will be identified and subjected to sanctions, thereby affecting their willingness to allocate resources towards preventive compliance activities. From an institutional perspective, coercive demands are more likely to generate substantive behavioural responses when managers interpret them as credible and enforceable

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obligations rather than merely formal expectations. This cognitive interpretation helps explain why organisations operating under comparable regulatory frameworks may exhibit different levels of commitment to proactive compliance. Accordingly, the influence of RP on internal compliance practices may depend partly on the extent to which external regulatory demands strengthen PSC.

Evidence from mandatory disclosure research supports this theoretical relationship by indicating that reporting obligations can produce more substantial organisational effects when accompanied by effective monitoring, greater transparency, and credible enforcement mechanisms (Christensen et al., 2021; Krueger et al., 2024). Conversely, where organisations can maintain a separation between formal disclosure requirements and their underlying management practices, opportunities for symbolic compliance and greenwashing may persist (Cho et al., 2015; Marquis et al., 2016). These contrasting outcomes suggest that regulatory obligations alone may be insufficient to stimulate meaningful preventive action unless managers recognise a credible likelihood of consequences for non-compliance. PSC therefore represents a plausible mediating mechanism through which RP is translated into stronger organisational motivation to establish and maintain PCM.

H4: *Perceived sanction certainty mediates the positive relationship between regulatory pressure and proactive compliance management among Chinese listed manufacturing firms.*

Law-Compliant Leadership Behaviour and Proactive Compliance Management

Leadership plays an important role in translating organisational compliance expectations into established procedures, resource allocation priorities, and managerial decisions. Research on corporate ethics programmes identifies executive commitment as a major determinant of how effectively ethical principles are incorporated into organisational structures and practices. Related evidence further demonstrates that managerial commitment distinguishes genuinely integrated social-performance initiatives from arrangements that remain formally established but disconnected from routine organisational activities (Weaver, 1999). Within the broader ethical leadership literature, leaders' conduct has been shown to influence organisational ethical climates and shape employees' behavioural responses through the communication and reinforcement of acceptable standards (Brown et al., 2005). Meta-analytical findings additionally establish strong associations between ethical leadership and favourable employee attitudes and behaviours, reinforcing the importance of leadership in promoting responsible organisational conduct (Bedi et al., 2015; Ng & Feldman, 2015).

In regulatory compliance settings, LCLB provides a more specific expression of these leadership mechanisms by emphasising the practical demonstration of respect for legal obligations and regulatory standards. Leaders who consistently observe applicable laws,

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communicate compliance requirements, provide appropriate guidance, respond predictably to violations, and incorporate legal considerations into organisational decisions can establish compliance as an operational priority rather than a symbolic commitment. Such visible conduct communicates behavioural expectations throughout the organisation and provides a foundation for strengthening compliance training, monitoring procedures, accountability mechanisms, and corrective practices. The importance of these organisational conditions is consistent with compliance culture research, which identifies clarity of expectations, consistency between managerial conduct and established standards, transparency, and the capacity to impose sanctions as important foundations of ethical organisational behaviour (Kaptein, 2008). Consequently, LCLB may contribute to the institutionalisation of preventive compliance practices by embedding regulatory responsibilities within everyday managerial and operational activities.

H5: *Law-compliant leadership behaviour has a positive effect on proactive compliance management among Chinese listed manufacturing firms.*

Moderating Role of Law-Compliant Leadership Behaviour

Although PSC may strengthen organisational motivation to comply with regulatory obligations, heightened awareness of enforcement risks does not necessarily translate into coordinated preventive action. The conversion of such motivation into established compliance practices depends considerably on managerial priorities and leadership decisions concerning resource allocation, the encouragement of employee reporting and escalation, and the relative importance assigned to regulatory obligations when these conflict with immediate commercial demands. Social learning theory suggests that employees interpret leaders' observable conduct as an indication of which behaviours are genuinely expected, supported, and rewarded within an organisation (Brown et al., 2005). Moreover, ethical leadership can influence successive managerial levels, facilitating the transmission of consistent behavioural standards throughout organisational hierarchies (Mayer et al., 2009).

Accordingly, the positive association between PSC and PCM is expected to become stronger when LCLB is more pronounced. Where leaders demonstrate consistent adherence to legal requirements and visibly prioritise regulatory responsibilities, perceptions of enforcement risk are more likely to encourage substantive investments in compliance monitoring, employee training, documentation procedures, and corrective mechanisms. Conversely, in organisations characterised by weak law-compliant leadership, managers may recognise potential regulatory consequences without translating this awareness into adequate preventive measures. Such circumstances may encourage limited procedural adjustments or superficial reporting practices rather than meaningful improvements in internal compliance systems. This reasoning is consistent with the distinction between integrated and decoupled corporate

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ethics programmes, which emphasises the importance of managerial commitment in determining whether formal compliance arrangements become embedded in organisational practice (Weaver, 1999). It also aligns with evidence indicating that top-management commitment strengthens organisational responsiveness to ecological pressures within institutional environments. LCLB is therefore expected to act as a positive moderating condition, reinforcing the relationship between PSC and PCM by facilitating the translation of perceived enforcement risks into coordinated organisational compliance activities.

H6: *Law-compliant leadership behaviour positively moderates the relationship between perceived sanction certainty and proactive compliance management, such that the positive relationship becomes stronger when law-compliant leadership behaviour is high.*

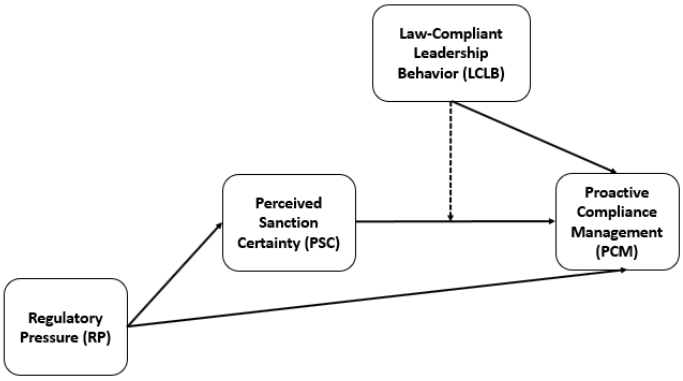


Figure 1: Conceptual Framework
Note: RP = Regulatory Pressure; PSC = Perceived Sanction Certainty; PCM = Proactive Compliance Management; LCLB = Law-Compliant Leadership Behaviour. The dashed line represents the moderating effect of LCLB on the PSC→PCM relationship.

RESEARCH METHODOLOGY

Research Design, Population, and Respondents

A quantitative, cross-sectional survey design was employed to investigate the proposed relationships, with the conceptual model evaluated using PLS-SEM. The empirical investigation focused on Chinese listed manufacturing companies operating within an increasingly stringent regulatory environment for ESG and sustainability disclosure. Given that the constructs concerned organisational perceptions, governance arrangements, and compliance practices rather than general employee attitudes, data collection targeted key informants possessing relevant professional knowledge and direct operational experience. Eligible respondents included executives, managers, supervisors, and professional specialists involved in regulatory compliance, ESG and sustainability reporting, environmental management, occupational health and safety,

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internal auditing, risk control, operational management, supply-chain compliance, legal affairs, and associated governance functions. These respondents were selected on the basis of their familiarity with the organisational processes and regulatory responsibilities relevant to the research objectives. Following data screening and the exclusion of unusable responses, the final analytical dataset comprised 427 valid survey responses.

Respondent Profile

Figure 2 presents the demographic and professional characteristics of the survey participants. Respondents were predominantly aged 30–39 years (50.4%), followed by those aged 40–49 years (29.3%). Regarding gender distribution, 62.1% identified as male and 36.3% as female. Educational attainment was concentrated at the bachelor's (54.8%) and master's (40.0%) levels, indicating that most participants possessed university-level qualifications. Professional experience varied across the sample, with 18.3% reporting fewer than 5 years, 33.3% having 5–10 years, 24.4% possessing 11–15 years, 16.2% reporting 16–20 years, and 8.0% having more than 20 years of experience. The sample also represented different levels of organisational responsibility, comprising professional staff and specialists (15.0%), supervisors and team leaders (24.4%), middle-level managers (31.9%), departmental and functional managers (22.7%), and senior executives or top-management personnel (6.1%). Participants were drawn primarily from quality management and environmental, health and safety functions, production and operations, corporate compliance and legal affairs, supply-chain management and procurement, and internal auditing and risk control. Industry representation extended across electronics and electrical machinery, automotive and transport equipment, general machinery and industrial components, chemicals, pharmaceuticals and medical devices, and specialised industrial materials. This diversity of professional responsibilities, experience levels, and manufacturing sectors provides a broad organisational perspective, supporting the relevance of respondents as knowledgeable informants for examining the compliance-related constructs incorporated into the proposed model.

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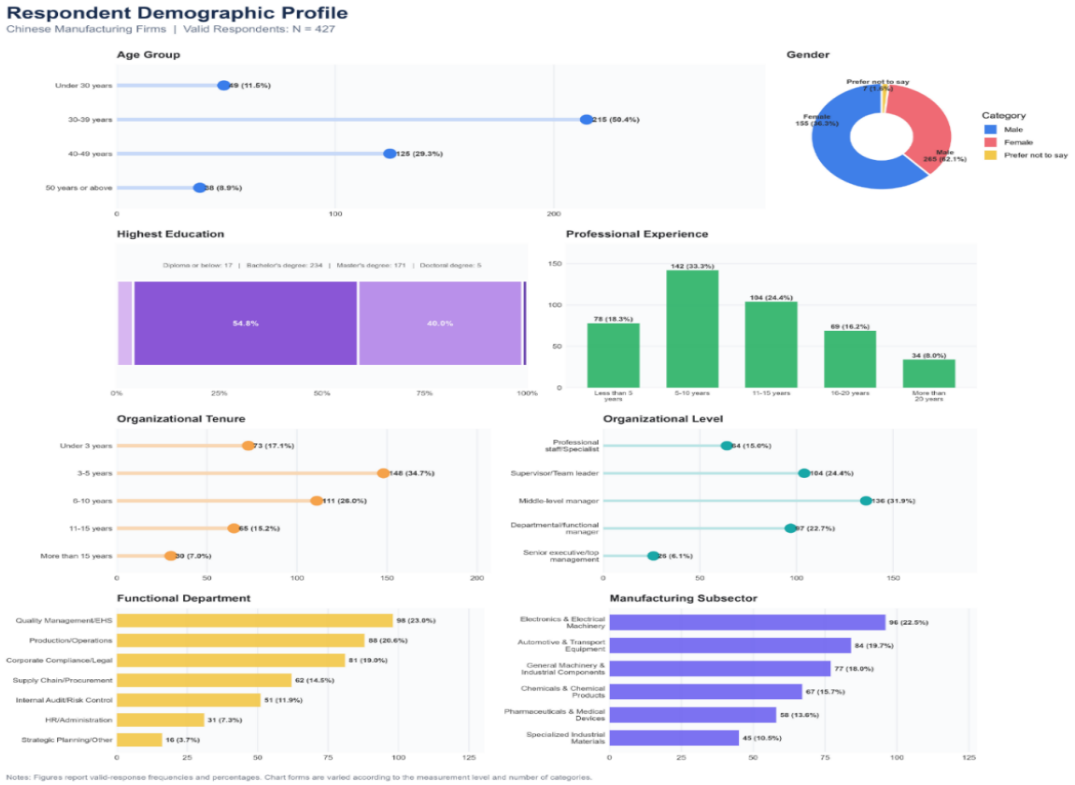


Figure 2: Respondent Demographic Profile (N = 427)

The final sample of 427 valid responses was considered adequate for estimating the proposed parsimonious four-construct model. The more complex endogenous equation specified PCM as a function of RP, PSC, LCLB, and their relevant interaction term, whereas the second endogenous equation examined RP as a predictor of PSC. The available sample substantially exceeded the conventional heuristic minimum commonly applied in PLS-SEM, providing a substantial empirical basis for estimating the proposed direct relationships and moderating effect. Nevertheless, sample adequacy was assessed with consideration of model complexity, effect estimation, and statistical precision rather than relying exclusively on the traditional ten-times rule. This approach is consistent with methodological recommendations emphasising the importance of evaluating sample-size requirements in relation to the structural model and the effects under investigation (Cohen, 2013; Hair et al., 2019).

Measures

All constructs were operationalised using multi-item measurement scales drawn from previously published studies and adapted to reflect the regulatory and organisational characteristics of Chinese listed manufacturing companies. RP was measured using indicators based on the framework developed by Lee et al. (2026), capturing the

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intensity of regulatory obligations and external oversight associated with sustainability requirements. The measurement of PSC incorporated four items adapted from Wang and Zhang (2026), focusing on managerial perceptions of the likelihood that organisational non-compliance would be detected and result in regulatory consequences. PCM was evaluated through four indicators derived from Feng and Wang (2025), addressing the anticipatory identification of compliance risks, communication and implementation of regulatory requirements, ongoing monitoring, corrective interventions, and procedural updates. LCLB was assessed using five items adopted from Điệp and Phan Thanh (2025), reflecting observable leadership commitment to legal obligations, compliance-related guidance, equitable responses to violations, and the integration of legal requirements into managerial decision-making. Collectively, the measurement instrument comprised 17 indicators, all specified as reflective measures of their respective latent constructs. Adaptation and specification of the measurement items were informed by established methodological guidance concerning construct conceptualisation, scale development, and indicator formulation to maintain consistency between the theoretical definitions and their empirical operationalisation (Ambrose & Anstey, 2010; DeVellis, 2021; Gilbert A. Churchill, 1979; Hinkin, 1998; MacKenzie et al., 2011).

Table 1: Constructs and Measurement Sources

Role	Construct	Abbr.	Items	Measurement Source
Independent Variable	Regulatory Pressure	RP	4	Lee et al. (2026)
Mediator	Perceived Sanction Certainty	PSC	4	Wang and Zhang (2026)
Dependent Variable	Proactive Compliance Management	PCM	4	Feng and Wang (2025)
Moderator	Law-Compliant Leadership Behaviour	LCLB	5	Điệp and Phan Thanh (2025)

Note: All four scales were adapted, and was contextualized for Chinese listed manufacturing firms and the ESG/regulatory-compliance setting. Total measurement items = 17.

Data Screening and Common Method Bias

The final analytical dataset contained complete item-level responses from 427 participants, with no missing observations or duplicated respondent identifiers. All measurement indicators exhibited responses within their intended scale ranges. Because both predictor and outcome variables were collected through the same survey instrument, potential common method bias (CMB) was explicitly considered during the assessment of data quality. Following the full collinearity approach proposed by Kock (2015), variance inflation factors (VIFs) were calculated using composite construct scores, with each construct regressed against the remaining constructs. The resulting VIF values ranged from 1.240 to 2.259, remaining below the conservative threshold of

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3.3. These results suggest that the observed covariance structure was unlikely to be dominated by a single common method factor. Nevertheless, the full collinearity assessment provides diagnostic evidence rather than definitive confirmation that CMB is absent. Accordingly, the findings were interpreted cautiously, consistent with the methodological considerations outlined by Podsakoff et al. (2003). To protect respondent confidentiality, the analytical dataset was anonymised and contained no personal names, direct contact information, or other individual identifiers.

PLS-SEM Estimation and Assessment Criteria

The selection of PLS-SEM was guided by the study's emphasis on prediction-oriented analysis and the simultaneous examination of direct, mediating, and moderating relationships within a model containing two endogenous constructs. This analytical approach is particularly relevant to research concerned with theoretical development, the prediction of endogenous outcomes, and the estimation of relationships among latent variables in complex behavioural frameworks (Hair, 2017; Hair et al., 2019; Henseler et al., 2014). Its suitability is further supported by previous applications involving mediation and moderation in sustainability management, financial adoption, technology acceptance, and environmentally responsible organisational practices (Hidayat-ur-Rehman & Hossain, 2024; Nigatu et al., 2024; Saiyed et al., 2026; Tandilino et al., 2025; Wei et al., 2025).

The analytical procedure involved separate evaluations of the measurement and structural models. Measurement quality was examined through indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Internal consistency was evaluated using Cronbach's alpha and composite reliability, with values exceeding .70 considered acceptable (Nunnally & Bernstein, 1994). Convergent validity was assessed through average variance extracted (AVE), applying the recommended threshold of .50 (Fornell & Larcker, 1981). Discriminant validity was examined using both the Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT), with .85 and .90 serving as conservative and alternative reference thresholds, respectively (Henseler et al., 2015). Following measurement-model assessment, the structural analysis examined potential multicollinearity through inner variance inflation factors (VIFs), alongside standardised path coefficients, bootstrapped standard errors, t-statistics, confidence intervals, coefficients of determination (R^2), and effect sizes (f^2). The assessment also incorporated mediation, moderation, and model-fit considerations to evaluate the proposed relationships and overall model performance. Statistical significance was determined using bootstrapped p-values and corresponding 95% confidence intervals, providing an inferential basis for interpreting the estimated structural effects.

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RESULTS

Measurement Model

The measurement-model assessment provided evidence of satisfactory indicator reliability, internal consistency, and convergent validity, with no substantial concerns regarding indicator-level multicollinearity. As presented in Table 2, standardised outer loadings ranged from 0.784 to 0.882, exceeding the commonly recommended threshold of .70 and indicating that the observed indicators adequately represented their respective latent constructs. Indicator-level VIF values varied between 1.704 and 2.764, suggesting that multicollinearity was unlikely to compromise measurement estimation.

Table 2: Measurement Model Assessment

Construct	Item	Loading	VIF	Alpha	rho_A	CR	AVE
RP	RP1	.825	1.915	.867	.867	.909	.714
	RP2	.857	2.178				
	RP3	.847	2.111				
	RP4	.852	2.130				
PSC	PSC1	.814	1.802	.854	.856	.901	.695
	PSC2	.807	1.803				
	PSC3	.859	2.107				
	PSC4	.855	2.160				
PCM	PCM1	.794	1.704	.848	.853	.898	.688
	PCM2	.813	1.847				
	PCM3	.827	1.932				
	PCM4	.882	2.409				
LCLB	LCLB1	.784	1.869	.893	.902	.921	.702
	LCLB2	.803	2.049				
	LCLB3	.838	2.264				
	LCLB4	.877	2.597				
	LCLB5	.882	2.764				

Note: CR = Composite Reliability; AVE = Average Variance Extracted.

The reliability statistics further supported the consistency of the measurement scales, with Cronbach's alpha ranging from 0.848 to 0.893, rho_A from 0.853 to 0.902, and composite reliability from 0.898 to 0.921. Convergent validity was also supported by the AVE estimates of 0.714 for RP, 0.695 for PSC, 0.688 for PCM, and 0.702 for LCLB, all exceeding the minimum acceptable threshold of 0.50. Collectively, these findings indicate that the measurement indicators demonstrated adequate reliability and that the constructs captured a satisfactory proportion of variance in their associated indicators. The model estimated using the PLS algorithm is illustrated in Figure 3.

Further assessment of the measurement model established satisfactory discriminant validity across all constructs. As reported in Table 3, HTMT values ranged from 0.154 to 0.735, with the highest estimate observed between PSC and PCM (0.735). This

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maximum value remained below the conservative threshold of 0.85, indicating adequate empirical distinction between the latent constructs. The Fornell–Larcker assessment presented in Panel B provided additional support, as the square root of AVE for each construct exceeded its correlations with all other constructs. Specifically, the diagonal values were 0.845 for RP, 0.834 for PSC, 0.830 for PCM, and 0.838 for LCLB. Consistent with these findings, the cross-loading matrix presented in Appendix A demonstrated that every measurement indicator loaded more strongly on its designated construct than on any alternative construct.

Table 3: Discriminant Validity

Panel A. Heterotrait-Monotrait Ratio (HTMT)

	RP	PSC	PCM	LCLB
RP				
PSC	.522			
PCM	.655	.735		
LCLB	.302	.154	.467	

Panel B. Fornell-Larcker Criterion

	RP	PSC	PCM	LCLB
RP	**.845**			
PSC	.450	**.834**		
PCM	.562	.627	**.830**	
LCLB	.268	.137	.410	**.838**

Note: Diagonal values in Panel B are the square roots of AVE.

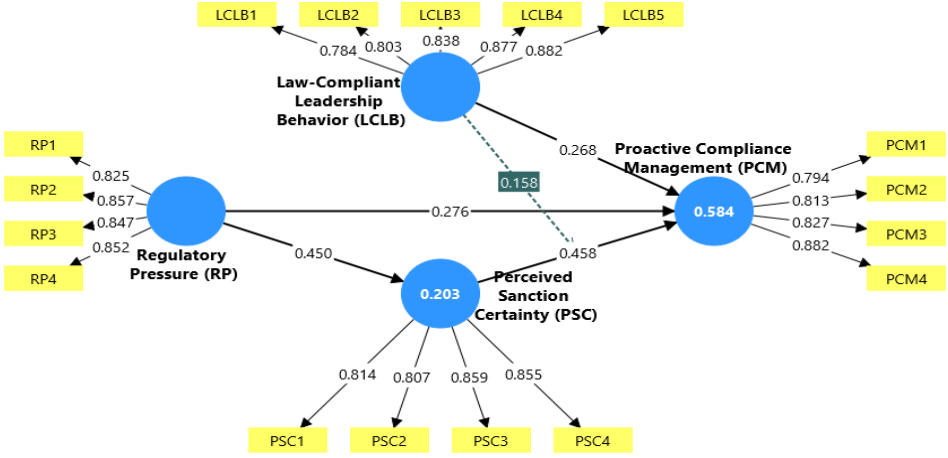


Figure 3: PLS-SEM Algorithm Model

Taken together, the HTMT estimates, Fornell–Larcker results, and indicator cross-loadings provide convergent evidence that the constructs are sufficiently

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distinguishable. The measurement model therefore satisfied the assessed reliability and validity requirements, providing an appropriate basis for proceeding with the structural-model evaluation.

Structural Model and Hypothesis Testing

The structural-model estimates and bootstrapping results are presented in Table 4 and Fig. 4. The analysis revealed statistically significant positive relationships among RP, PSC, and PCM, providing empirical support for the first three hypotheses. Specifically, RP was positively associated with PSC (H1: $\beta = 0.450$, SE = 0.038, $t = 11.795$, $p < 0.001$, 95% CI [0.374, 0.525]) and PCM (H2: $\beta = 0.276$, SE = 0.034, $t = 7.990$, $p < 0.001$, 95% CI [0.209, 0.342]). Similarly, PSC demonstrated a significant positive relationship with PCM (H3: $\beta = 0.458$, SE = 0.034, $t = 13.556$, $p < 0.001$, 95% CI [0.390, 0.521]).

Table 4: Structural Model, Mediation, and Moderation Results

Hyp.	Relationship	Effect	β	SE	t	p	95% CI	f^2	VIF	Decision
H1	RP → PSC	Direct	.450	.038	11.795	<.001	[.374, .525]	.254	1.000	Supported
H2	RP → PCM	Direct	.276	.034	7.990	<.001	[.209, .342]	.138	1.327	Supported
H3	PSC → PCM	Direct	.458	.034	13.556	<.001	[.390, .521]	.401	1.256	Supported
H4	RP → PSC → PCM	Mediation	.206	.023	8.851	<.001	[.162, .255]			Supported
H5	LCLB → PCM	Direct	.268	.035	7.735	<.001	[.201, .337]	.161	1.078	Supported
H6	LCLB × PSC → PCM	Moderation	.158	.031	5.122	<.001	[.098, .220]	.059	1.005	Supported

Note: β = Standardized Coefficient; SE = Bootstrap Standard Error; CI = Percentile Bootstrap Confidence Interval. For H4, the positive and significant direct and indirect effects indicate complementary partial mediation. The total RP→PCM effect is $\beta = .482$, $p < .001$.

Accordingly, H1, H2, and H3 were supported, indicating that stronger regulatory demands are associated with heightened perceptions of enforcement certainty and more proactive organisational compliance practices, while greater PSC is independently associated with stronger PCM. The corresponding f^2 effect sizes were 0.254 for RP→PSC, 0.138 for RP→PCM, and 0.401 for PSC→PCM, indicating differences in the relative explanatory contributions of these relationships. Furthermore, inner VIF values ranged from 1.000 to 1.327, suggesting that multicollinearity among the structural predictors was not a substantive concern and was unlikely to compromise the interpretation of the estimated path coefficients.

Mediation and Moderation

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The mediation analysis established a statistically significant positive indirect relationship between RP and PCM through PSC (H4: β = .206, SE = .023, t = 8.851, p < .001, 95% CI [.162, .255]). Because the direct RP→PCM pathway remained positive and statistically significant, the findings support complementary partial mediation, indicating that RP is associated with PCM both directly and indirectly through heightened PSC. The overall relationship was further reflected in the significant total effect of RP on PCM (β = .482, p < .001). These results support H4 and suggest that managerial perceptions of enforcement likelihood represent an important, although not exclusive, mechanism linking external regulatory demands with proactive organisational compliance practices.

The leadership-related hypotheses also received empirical support. LCLB demonstrated a significant positive direct association with PCM (H5: β = .268, SE = .035, t = 7.735, p < .001, 95% CI [.201, .337], f^2 = .161), indicating that stronger leadership commitment to legal compliance corresponds with more developed preventive compliance practices. Furthermore, the interaction between LCLB and PSC was positive and statistically significant (H6: β = .158, SE = .031, t = 5.122, p < .001, 95% CI [.098, .220], f^2 = .059). This finding indicates that LCLB positively moderates the PSC–PCM relationship, such that the association between perceived enforcement certainty and proactive compliance becomes stronger at higher levels of law-compliant leadership. The interaction pattern illustrated in Figure 5 further supports this interpretation, demonstrating the hypothesised reinforcing role of leadership in translating perceived regulatory enforcement risks into proactive organisational compliance.

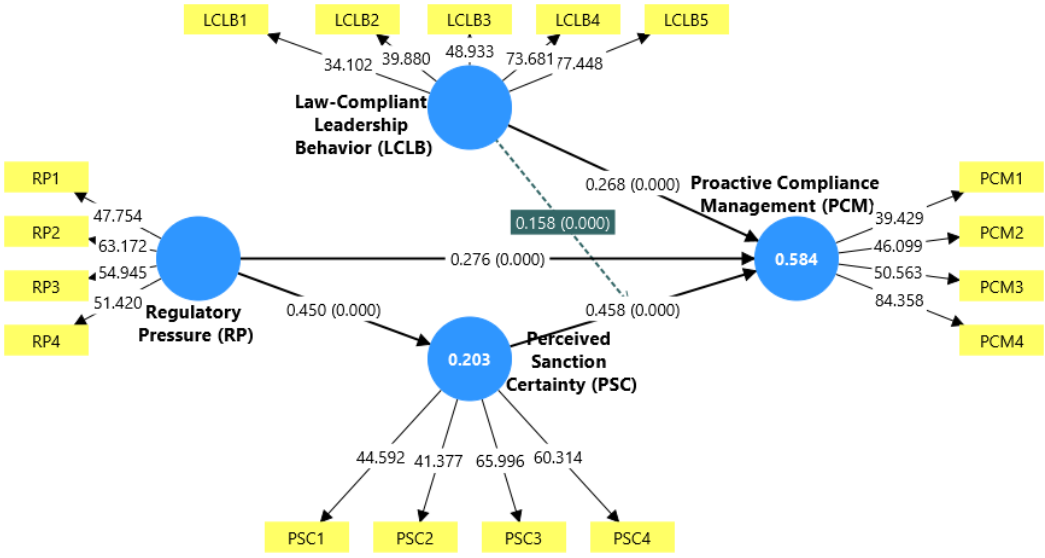


Figure 4: Bootstrapping Results

Explanatory Power and Model Fit

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The explanatory performance of the structural model was reflected in its ability to account for 20.3% of the variance in PSC (R^2 = .203; adjusted R^2 = .201) and 58.4% of the variance in PCM (R^2 = .584; adjusted R^2 = .580). Regarding model fit, the estimated model produced a standardised root mean square residual (SRMR) of .046 and a normed fit index (NFI) of .919, whereas the corresponding saturated-model values were .047 and .918, respectively. Considered together with the estimated path coefficients and effect sizes, these indices indicate that the proposed structural relationships provide a coherent explanation of PCM within the sampled organisational context.

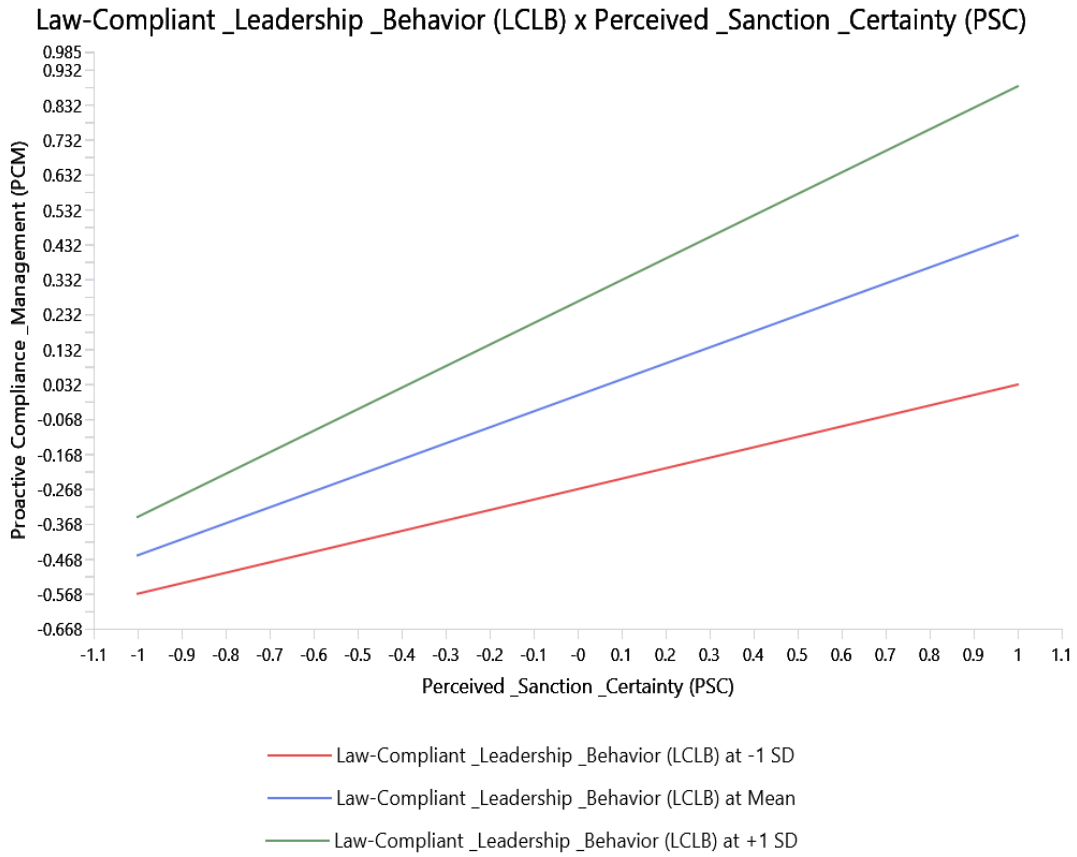


Figure 5: Simple Slope Analysis of the Moderating Effect
Note: The positive interaction coefficient indicates that Law-Compliant Leadership Behaviour strengthens the positive relationship between Perceived Sanction Certainty and Proactive Compliance Management.

Table 5: Explanatory Power and Model Fit

Panel A. Coefficient of Determination

Endogenous Construct	R^2	Adjusted R^2

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PSC	.203	.201
PCM	.584	.580

Panel B. Model Fit

Fit Index	Saturated Model	Estimated Model
SRMR	.047	.046
d_ULS	.332	.328
d_G	.131	.129
Chi-Square	327.263	321.520
NFI	.918	.919

Note: The estimated-model SRMR is reported directly from SmartPLS.

The empirical findings further demonstrated statistically significant support for all six hypotheses ($p < .001$), substantiating the proposed relationships among the study constructs.

DISCUSSION

The findings provide an integrated understanding of how external regulatory demands are associated with internal compliance behaviour among Chinese listed manufacturing companies. A central outcome is the significant positive relationship between RP and PSC, suggesting that stronger regulatory expectations are accompanied by greater managerial awareness of the likelihood that compliance violations will be detected and subjected to enforcement measures. This relationship supports the deterrence theory proposition that regulatory obligations acquire behavioural relevance when organisational decision-makers perceive non-compliance as both observable and consequential. It is consistent with established corporate deterrence research, which emphasises that the perceived probability of enforcement may exert a stronger influence on compliance decisions than the severity of potential sanctions (Braithwaite & Makkai, 1991; Paternoster, 1987; Thornton et al., 2005). The result also complements institutional research conducted in China, where regulatory and institutional pressures have been associated with environmental strategies, green innovation, and improvements in organisational management practices (Zeng et al., 2022). Within the emerging ESG disclosure framework, regulatory pressure therefore appears to extend beyond communicating formal expectations by increasing managerial sensitivity to the potential detection and consequences of deficiencies in disclosure-related processes.

Beyond influencing enforcement perceptions, RP demonstrated a significant direct positive association with PCM. This finding is consistent with the coercive mechanisms described by institutional theory; whereby external regulatory expectations encourage organisations to adjust their internal structures and operating procedures. It also reinforces evidence that environmental regulations can stimulate organisational adaptation rather than function exclusively as an additional compliance cost (Berrone et al., 2013; Zhou et al., 2023). Similar conclusions emerge from mandatory

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sustainability reporting research, which indicates that disclosure obligations can influence substantive corporate activities and internal management arrangements (Aureli et al., 2020; Fiechter et al., 2022). For listed manufacturing enterprises, this relationship is particularly relevant because sustainability disclosure depends on information generated across environmental management systems, production activities, supply-chain operations, occupational safety procedures, and governance documentation. Consequently, stronger regulatory demands may encourage firms to establish anticipatory compliance arrangements capable of identifying emerging obligations and addressing potential deficiencies before reporting failures or enforcement interventions occur.

Among the direct predictors, PSC exhibited the strongest structural relationship with PCM ($\beta = .458$), accompanied by the largest f^2 effect size. This result provides particularly important insight into the organisational application of deterrence theory. Rather than implying that compliance behaviour is motivated exclusively by fear of punishment, the finding suggests that greater confidence in the likelihood of enforcement may increase the perceived organisational value of preventive compliance arrangements. When managers believe that inadequate reporting systems or regulatory violations are likely to attract scrutiny, investments in monitoring, documentation, internal review, escalation procedures, and corrective mechanisms become more justifiable. This interpretation is consistent with earlier compliance research demonstrating that enforcement practices interact with regulatory legitimacy, organisational norms, and management systems in shaping corporate responses (Gunningham et al., 2004; May, 2005; Winter & May, 2001). In the ESG disclosure context, credible oversight may therefore encourage firms to strengthen the internal processes supporting reporting accuracy and regulatory compliance, although improvements in disclosure quality were not directly established by the present model.

The mediation analysis further clarifies how regulatory demands are associated with proactive organisational responses. PSC partially mediated the relationship between RP and PCM, with the complementary mediation pattern indicating that the direct and indirect pathways operate in the same positive direction. The direct pathway reflects the association between external regulatory requirements and organisational efforts to strengthen compliance systems. The indirect pathway introduces a cognitive-behavioural mechanism whereby stronger regulatory pressure is associated with heightened expectations of enforcement, which are subsequently related to more developed preventive compliance practices. This distinction extends existing evidence that mandatory disclosure requirements can influence corporate behaviour and internal organisational arrangements (Chen et al., 2018; Fiechter et al., 2022; Krueger et al., 2024). It also provides a plausible explanation for variation in organisational responses to comparable disclosure obligations. Even where formal regulatory requirements are similar, differences in managerial perceptions of enforcement credibility may correspond with different levels of investment in proactive compliance management.

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The findings therefore suggest that institutional pressure and deterrence perceptions should be considered complementary rather than competing explanations of organisational compliance behaviour.

Leadership represents another important dimension of this relationship. The significant positive association between LCLB and PCM indicates that organisations whose leaders visibly demonstrate commitment to legal requirements tend to exhibit stronger preventive compliance practices. This result is consistent with research on corporate ethics programmes, which identifies management commitment as a distinguishing characteristic of substantively integrated compliance arrangements rather than formally established but operationally disconnected systems (Weaver, 1999). It also corresponds with ethical leadership research demonstrating the importance of behavioural modelling, communication, reinforcement, and organisational climate in shaping employee conduct (Brown et al., 2005; Mayer et al., 2009). Within sustainability disclosure, leadership commitment is particularly relevant because the information required for ESG reporting originates across multiple organisational functions and operational activities. Effective compliance consequently requires coordination among production and operations, finance, environmental, health and safety (EHS), supply-chain management, internal auditing, and senior management, rather than reliance exclusively on legal or sustainability reporting departments. Leaders who consistently communicate regulatory priorities and reinforce appropriate conduct may facilitate this coordination, helping to integrate disclosure responsibilities into routine organisational decisions instead of treating reporting as an isolated administrative exercise.

The moderating effect of LCLB provides additional insight into the conditions under which perceived enforcement risks are associated with proactive organisational action. The positive interaction between LCLB and PSC, supported by the simple-slope analysis, indicates that the relationship between PSC and PCM is stronger at higher levels of law-compliant leadership. This finding is consistent with social learning theory, which suggests that employees and managers interpret leaders' conduct as an indication of the behaviours that are genuinely expected, supported, and rewarded. Where leadership visibly prioritises legal compliance, awareness of potential enforcement consequences may be more readily associated with practical measures such as employee training, regulatory monitoring, systematic documentation, and corrective action. Conversely, organisations characterised by weaker leadership commitment may recognise regulatory risks without allocating sufficient resources or establishing coordinated preventive procedures. The observed interaction therefore suggests that managerial perceptions of enforcement are more strongly associated with proactive compliance when supported by leadership practices that reinforce regulatory responsibilities. This interpretation also accords with evidence that top-management commitment influences organisational responsiveness to ecological pressures within institutional environments.

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These findings have particular relevance to China's transition towards mandatory ESG disclosure. Existing scholarship has emphasised materiality assessment, reporting credibility, assurance mechanisms, internal controls, and capital-market implications as important dimensions of sustainability reporting (Beske et al., 2020; Mezzanotte, 2023; Sun et al., 2024; Yan et al., 2024). The present study extends this perspective by identifying internal behavioural conditions associated with the organisational implementation of disclosure obligations. The results suggest that regulatory requirements, perceptions of credible enforcement, and leadership commitment are interconnected elements of proactive compliance management. Formal disclosure obligations may establish the institutional basis for compliance, but their association with preventive organisational practices is strengthened when managers anticipate meaningful enforcement consequences and leaders visibly support appropriate responses. This interpretation also helps explain why increasingly formalised reporting frameworks may coexist with symbolic disclosure and greenwashing where internal governance arrangements remain insufficiently developed (Cho et al., 2015; Delmas & Burbano, 2011; Marquis et al., 2016). The effectiveness of disclosure regulation should therefore be considered not only in relation to its legal provisions but also in terms of the organisational conditions through which those provisions are interpreted and implemented.

The moderation findings also offer a refinement of deterrence-based explanations of corporate compliance. Conventional deterrence reasoning places considerable emphasis on the relationship between enforcement expectations and compliant behaviour. The present evidence suggests that this relationship may depend partly on the organisational environment in which enforcement perceptions arise. Specifically, stronger LCLB appears to reinforce the positive association between PSC and PCM, indicating that external regulatory credibility and internal leadership commitment may operate as complementary influences. This perspective moves beyond an explanation centred exclusively on increasing enforcement intensity by recognising the importance of managerial support in translating perceived regulatory risks into coordinated preventive practices. Such complementarity is consistent with research emphasising that formal compliance controls, ethical management commitment, and organisational ethics systems function through interconnected mechanisms rather than independently of one another (Kaptein, 2008).

Taken together, the study contributes to three related areas of scholarship. First, it broadens mandatory ESG disclosure research by shifting attention from external reporting outcomes towards PCM as an internal organisational response to regulatory demands. Second, it integrates institutional and deterrence theories by identifying PSC as a mediating mechanism linking coercive regulatory expectations with preventive compliance practices. Third, it extends the application of social learning theory by establishing LCLB as a boundary condition that strengthens the relationship between perceived enforcement certainty and proactive organisational compliance. The model's

explanatory capacity for PCM (R^2 = .584) indicates that this integrated theoretical perspective accounts for a substantial proportion of the observed variation in preventive compliance practices among the surveyed manufacturing companies. Nevertheless, the remaining unexplained variance suggests that additional organisational and institutional characteristics may also be relevant. Future investigations could therefore examine the contributions of resource availability, compliance culture, internal-control maturity, board-level oversight, external assurance, digital reporting infrastructure, and ownership characteristics to develop a more comprehensive understanding of how regulatory disclosure requirements become embedded in organisational governance.

CONCLUSION, POLICY IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS

Against the backdrop of China's rapidly evolving sustainability disclosure framework, this study investigated how external regulatory demands are associated with the development of PCM among listed manufacturing companies. Drawing on institutional theory, deterrence theory, and social learning theory, the research examined a moderated mediation framework in which PSC served as an intervening mechanism linking RP with PCM, while LCLB was specified as a moderating influence on the PSC–PCM relationship. Empirical evidence obtained from 427 respondents provided statistical support for all six proposed hypotheses. RP demonstrated significant positive associations with both PSC and PCM, while PSC emerged as a particularly important predictor of preventive compliance practices and partially mediated the relationship between regulatory demands and organisational compliance responses. Furthermore, LCLB exhibited a significant positive direct association with PCM and strengthened the positive relationship between PSC and PCM. Collectively, these findings suggest that the organisational implications of regulatory reform extend beyond formal compliance obligations, encompassing managerial interpretations of enforcement credibility and the leadership practices through which regulatory expectations become embedded in internal governance arrangements.

From a managerial perspective, the findings emphasise the importance of treating mandatory ESG disclosure as a continuous organisational responsibility rather than a periodic reporting obligation. Listed manufacturing companies should therefore establish preventive compliance systems that integrate regulatory monitoring with routine operational and governance activities. Such arrangements should incorporate clearly defined responsibilities, systematic identification of compliance risks, designated ownership of sustainability-related information, internal verification and review procedures, employee training, escalation mechanisms, continuous monitoring, and timely corrective action. Visible commitment from senior leadership is equally important, particularly in ensuring that compliance priorities are not undermined by conflicting managerial signals favouring immediate operational or commercial objectives over lawful disclosure. Organisations should also strengthen their capacity

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to identify and interpret regulatory developments through structured regulatory intelligence processes. Given the significant relationship between PSC and PCM, managers need reliable information concerning changes in stock exchange requirements, supervisory expectations, assurance obligations, and potential consequences of non-compliance. Integrating this information into internal decision-making may support more timely and coordinated responses to emerging disclosure responsibilities.

The findings also offer implications for regulatory authorities and stock exchanges responsible for implementing sustainability disclosure requirements. Establishing formal reporting obligations alone may be insufficient to encourage substantive organisational adaptation unless these requirements are accompanied by clear implementation guidance, credible monitoring arrangements, transparent enforcement procedures, and consistent supervisory communication. Such measures may strengthen managerial perceptions that disclosure violations are likely to be identified and addressed, thereby reinforcing incentives for preventive compliance. At the organisational level, greater accountability among boards of directors and senior executives may further support the integration of regulatory requirements into established governance processes, particularly given the observed reinforcing influence of LCLB on the PSC–PCM relationship. Manufacturing-specific regulatory guidance is also important because material sustainability issues, operational exposures, and information-management requirements differ across electronics, automotive manufacturing, chemicals, pharmaceuticals, machinery, and specialised industrial materials. An effective regulatory approach should therefore combine consistent baseline disclosure obligations with practical, sector-sensitive guidance that enables companies to develop reliable internal compliance arrangements.

Notwithstanding these contributions, several methodological and contextual limitations warrant consideration. The cross-sectional research design restricts the ability to establish temporal ordering or draw definitive causal conclusions concerning the relationships among the investigated constructs. Moreover, the exclusive focus on Chinese listed manufacturing companies limits the direct generalisability of the findings to other industries, institutional environments, and legal jurisdictions. Although the full collinearity diagnostics produced satisfactory results, the possibility of CMB cannot be completely excluded because the principal variables were measured through perceptual responses collected from the same survey source. The analytical dataset also lacked firm-level clustering information and longitudinal observations, preventing the examination of within-firm changes and organisational adaptation over time.

Future research could address these limitations through longitudinal or multi-wave designs that investigate compliance practices before and after significant regulatory milestones. Comparative studies involving Chinese companies and organisations operating under alternative mandatory sustainability reporting frameworks would

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further clarify the institutional conditions influencing regulatory responsiveness. Integrating survey responses with archival evidence on enforcement activity, external assurance, and disclosure quality could provide additional opportunities to assess the relationships between managerial perceptions and observable organisational outcomes. Mixed-methods investigations may also offer deeper insights into how materiality requirements and enforcement expectations are interpreted and implemented in everyday management practices. Further theoretical extensions could incorporate internal-control maturity, board-level ESG oversight, organisational compliance culture, assurance quality, governance structures, and digital reporting capabilities as additional explanatory mechanisms or moderating conditions. Such investigations would advance understanding of the organisational processes through which mandatory sustainability disclosure requirements may develop from formal regulatory obligations into enduring capabilities for proactive compliance management.

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Appendix A. Cross Loadings

Item	RP	PSC	PCM	LCLB
RP1	.825	.354	.483	.257
RP2	.857	.389	.473	.198
RP3	.847	.376	.469	.180
RP4	.852	.402	.476	.271
PSC1	.393	.814	.502	.126
PSC2	.350	.807	.494	.090
PSC3	.389	.859	.573	.148
PSC4	.367	.855	.519	.089
PCM1	.449	.496	.794	.308
PCM2	.451	.492	.813	.352
PCM3	.457	.527	.827	.315
PCM4	.506	.563	.882	.381
LCLB1	.216	.142	.315	.784
LCLB2	.180	.075	.296	.803
LCLB3	.215	.116	.336	.838
LCLB4	.271	.124	.389	.877
LCLB5	.230	.113	.369	.882