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Identification of Dimensions, Components, and Indicators of Business Failure with Emphasis on Accounting Anomaly Indicators and Corporate Governance

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ABSTRACT

The purpose of the present study was to identify the dimensions, components, and indicators of business failure with particular emphasis on accounting anomaly indicators and corporate governance mechanisms. The study is qualitative in terms of research approach and applied in terms of objective, and it was conducted using thematic analysis methodology. The statistical population consisted of academic experts and professionals in the fields of accounting, finance, and corporate governance who possessed sufficient knowledge and expertise regarding the phenomenon of business failure. Participants were selected using purposive sampling. The sample size was not predetermined, and interviews continued until theoretical saturation was achieved; that is, after several consecutive interviews, no new concepts or themes emerged from the data. Accordingly, interviews were conducted with 12 participants. To ensure the trustworthiness of the findings, strategies such as member checking and peer review of the coding and analysis process were employed in order to assess the consistency of the researcher's interpretations with the actual perspectives of the experts. The results indicated that the dimensions of corporate governance encompass the following components: macro-level business failure factors, organizational-level business failure factors, auditor-specific characteristics, audit process, audit outcomes, role duality, ownership concentration, board independence, board size, and institutional ownership. Furthermore, the dimension of corporate accounting anomalies includes the following indicators: number of shares, profitability, asset growth, earnings management, firm size, book-to-market ratio, investment activities, financing structure, and market efficiency. The findings of this study demonstrate that business failure is a multidimensional phenomenon that is significantly influenced by the interaction between accounting anomaly indicators and corporate governance mechanisms, and that the systematic identification of these dimensions can provide an effective foundation for improving predictive models and preventive policy formulation within organizations.

Keywords: Business failure; Accounting anomalies; Corporate governance indicators; Marketing

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Introduction

Business failure and corporate bankruptcy remain among the most consequential adverse outcomes in modern economies because they transmit losses across stakeholders, disrupt value chains, erode employment, and weaken trust in capital markets. In management research, the bankruptcy phenomenon is no longer treated solely as an ex post accounting event; rather, it is increasingly conceptualized as a multi-stage process of organizational decline in which strategic misalignment, governance breakdowns, and information quality problems interact with financial constraints and macroeconomic shocks. Recent mapping of the business failure literature also indicates a pronounced shift from narrow ratio-based diagnosis toward integrative perspectives that combine firm-level financial signals, governance architecture, and external environment dynamics to explain why some firms deteriorate rapidly while others recover or successfully restructure (1). This shift is particularly salient in emerging markets, where institutional volatility, ownership concentration, and heterogeneous enforcement can amplify the governance and information channels through which distress materializes.

The empirical study of bankruptcy prediction is grounded in a long tradition of accounting-based early warning systems. Seminal work established that financial ratios can discriminate between failing and non-failing firms, laying the methodological foundation for failure prediction using observable accounting signals (2). Building on this foundation, discriminant models such as the Z-score formalized multivariate prediction and demonstrated that combinations of ratios provide stronger classification power than single indicators (3). While these classical models remain influential in the management and accounting literature, contemporary research recognizes that financial ratios are not merely mechanical predictors; they can be distorted by managerial discretion, shaped by governance arrangements, and conditioned by market expectations and macroeconomic regimes. Consequently, modern bankruptcy research increasingly views accounting information as embedded within a broader governance and institutional context rather than as a standalone diagnostic tool.

One major development in this evolution is the incorporation of macroeconomic dynamics into firm-level distress assessment. Credit risk and bankruptcy likelihood are affected not only by internal performance but also by business cycle conditions, financing costs, and demand fluctuations. Evidence suggests that macroeconomic variables contribute substantively to explaining default and distress risk beyond firm-specific accounting information, particularly during downturns when liquidity constraints and refinancing risk intensify (4). In a similar vein, comprehensive distress-risk research emphasizes that expected returns and market pricing incorporate distress-related information, implying that bankruptcy risk is jointly determined by accounting fundamentals, market valuation channels, and economic conditions (5). For management scholars, this implies that failure prediction is inherently a multi-level problem: internal organizational signals must be interpreted alongside broader environmental pressures that affect solvency and resilience.

The increasing availability of large datasets and computational methods has further expanded bankruptcy prediction research beyond traditional statistical models. Comparative evidence indicates that data mining and machine learning approaches can outperform or complement classical techniques, especially when the underlying relationships are nonlinear, high-dimensional, or characterized by complex interactions among predictors (6). This methodological expansion aligns with more recent work on variable selection and model parsimony, which underscores that the predictive performance of bankruptcy models depends critically on selecting informative variables and avoiding overfitting, particularly when combining accounting, governance, and market indicators (7).

For management applications, these advances support a move toward decision-support systems that integrate multi-source indicators and yield more robust early warning signals for boards, auditors, regulators, and investors.

Within this broader predictive landscape, accounting anomalies have gained prominence as informative signals that may capture mispricing, reporting distortions, or systematic patterns in firm behavior associated with distress. Accounting anomalies are commonly studied in asset pricing and financial accounting as patterns where accounting-based characteristics predict returns or valuations in ways not fully explained by standard risk factors. At the firm level, anomalies can also be conceptualized as warning signs when accounting outcomes deviate from expected operational realities or when accrual-related patterns indicate opportunistic reporting. Early warning research directly links accounting anomalies to business failure, suggesting that abnormal accounting patterns can precede visible deterioration in solvency and can therefore serve as timely distress indicators (8). Moreover, contemporary evidence highlights the role of information intermediaries and trading behavior in shaping how anomalies are processed by markets, implying that anomaly signals may be amplified or attenuated by institutional trading and news flows (9). In emerging markets, additional methodological work has examined firm-level anomalies in the context of asset-pricing frameworks, reinforcing that anomaly patterns can be identified and tested at the micro level using advanced statistical approaches (10). Collectively, these strands suggest that accounting anomalies are not only finance constructs but also managerial signals of underlying governance, reporting, or strategic problems that may culminate in failure.

A central managerial mechanism through which accounting signals translate into organizational outcomes is earnings management. Earnings management can undermine the informativeness of financial statements, delay corrective action, and mislead stakeholders about the firm's true risk position. Evidence indicates that earnings management is meaningfully related to bankruptcy prediction, as manipulated accruals or real activities can obscure distress until it becomes severe, thereby worsening eventual outcomes (11). In addition, more recent empirical work emphasizes that the effect of earnings management on bankruptcy risk can be contingent on business strategy and can operate through nonlinear dynamics, suggesting that managerial reporting behavior interacts with strategic posture in shaping distress trajectories (12). From a management perspective, these findings reinforce the view that accounting anomalies and earnings management are not passive artifacts; they are outcomes of governance choices, incentive structures, and strategic decision-making under performance pressure.

Corporate governance is therefore increasingly positioned as a cornerstone of contemporary bankruptcy research. Governance mechanisms shape managerial incentives, constrain opportunism, and influence both the quality of financial reporting and the effectiveness of strategic oversight. In emerging markets, empirical evidence indicates that stronger governance is associated with lower financial distress and that governance weaknesses are linked with higher vulnerability to adverse shocks (13). Recent studies in the Iranian context also show that governance mechanisms can condition bankruptcy risk in interaction with other managerial behaviors such as tax avoidance, illustrating how governance functions as a moderating structure that can either curb or enable practices that increase distress exposure (14). Furthermore, applied research has proposed predictive models that integrate corporate governance mechanisms with financial ratios to improve bankruptcy prediction, highlighting the practical relevance of governance indicators for early warning systems and managerial monitoring (15). These developments indicate that governance is not only an explanatory variable but also a policy lever through which firms can reduce failure risk by strengthening oversight, enhancing transparency, and aligning management actions with stakeholder interests.

Evidence from state-owned enterprises and highly politicized settings also underscores that governance failures can be direct antecedents of bankruptcy, particularly when accountability is weak, oversight is fragmented, or political objectives undermine financial discipline. Recent research focusing on governance failures in state-owned enterprises attributes bankruptcy events to governance breakdowns, ineffective monitoring, and structural weaknesses that prevent timely correction of deteriorating performance (16). Such findings are especially relevant for contexts where ownership structures and institutional arrangements create principal–agent problems that differ from those in widely held corporations. They also motivate deeper consideration of board structure, audit architecture, and ownership concentration as mechanisms through which governance quality can either mitigate or exacerbate the likelihood of business failure.

The audit function, and particularly the interaction between auditors, audit committees, and boards, is another governance channel that affects bankruptcy risk through information quality and assurance. Auditors provide credibility to financial reports and can serve as external monitors that limit misreporting; however, audit quality itself is shaped by incentives, tenure, expertise, and client complexity. Research on organizational capital and the sticky behavior of selling, general, and administrative expenses suggests that cost structures and managerial adjustments can reflect deeper organizational features that are not immediately evident in headline financial ratios, emphasizing the importance of credible reporting and careful interpretation of accounting patterns (17). In management terms, this implies that effective governance must support not only compliance but also high-quality informational environments in which early warning signals—especially those embedded in accrual patterns, cost behavior, and investment/financing decisions—can be detected and acted upon.

Corporate governance also interacts with firm value and capital structure, implying that the same governance mechanisms that support performance may simultaneously influence bankruptcy risk through financing choices and market valuation. Recent evidence indicates that capital structure can moderate the relationship between corporate governance mechanisms and firm value, suggesting that leverage and financing policy condition how governance translates into economic outcomes (18). This insight is relevant to bankruptcy prediction because leverage is a primary mechanical driver of insolvency, but it is also a strategic choice influenced by board oversight, ownership preferences, and managerial incentives. Accordingly, governance indicators can be interpreted as upstream determinants of financial risk exposure, shaping the firm's vulnerability to shocks through capital structure decisions and investment policies.

Sustainability-oriented governance research further broadens the conceptual frame by emphasizing that governance quality affects long-term performance, risk management, and stakeholder alignment, particularly in complex industries such as energy. Evidence from leading energy producers across multiple European countries highlights governance implications for sustainable performance, reinforcing that governance mechanisms influence risk control, transparency, and strategic continuity (19). While sustainability performance is not equivalent to bankruptcy risk, it is tightly connected through the channels of risk governance, compliance, and strategic resilience. For firms operating in uncertain environments, sustainability-oriented governance can be viewed as part of an integrated risk management system that reduces the probability of abrupt failure by strengthening long-term decision-making and accountability structures.

The relationship between governance and broader stakeholder outcomes also appears in the corporate social responsibility (CSR) literature, which provides an additional lens for understanding distress risk. Early evidence links CSR engagement with financial performance, indicating that social responsibility may coincide with better risk management and reputational capital (20). Subsequent work highlights CSR initiatives as mechanisms for addressing social exclusion, illustrating how corporate actions can influence stakeholder relations and legitimacy in challenging contexts (21). Evidence also connects CSR with financial policies such as cash holdings, suggesting that CSR-related considerations may correlate with liquidity management and precautionary behavior (22). From a governance and bankruptcy perspective, CSR can be interpreted as both a signal and a mechanism: as a signal of management quality and stakeholder orientation, and as a mechanism that affects access to resources, reputational resilience, and the firm's capacity to maintain legitimacy during periods of performance deterioration.

Despite these advances, an enduring challenge in bankruptcy research is integrating accounting anomalies and governance indicators into a coherent predictive framework that is both theoretically grounded and practically operationalizable. Studies incorporating accounting, market, and macroeconomic variables show that distress prediction improves when models capture diverse information channels, supporting the case for multi-source indicator systems rather than reliance on any single category of predictors (23). However, the selection, operationalization, and contextual interpretation of indicators remain nontrivial, particularly in emerging markets where disclosure practices, enforcement intensity, and ownership structures can differ substantially from developed-market assumptions. Management research therefore benefits from frameworks that systematically classify and validate indicators at multiple levels, including macro conditions, organizational capabilities, audit and governance structures, and anomaly-based accounting signals.

Within the Iranian context, the relevance of integrating governance mechanisms with accounting-based predictors is heightened by market characteristics that can magnify information asymmetry and agency conflicts. Empirical evidence suggests that governance can meaningfully influence bankruptcy risk and can interact with managerial behaviors such as tax avoidance and earnings management, reinforcing the importance of governance as an explanatory and predictive domain (12, 14). Applied models specifically developed to predict corporate bankruptcy using governance mechanisms and financial ratios demonstrate that locally grounded indicator sets can improve predictive performance and provide more actionable insight for practitioners and regulators (15). At the same time, research emphasizing accounting anomalies as early warning signals suggests that anomaly-based indicators may capture subtle deterioration patterns that conventional ratio models might miss, especially when earnings management distorts the timing and visibility of distress (8, 11). These considerations motivate a qualitative, theory-building approach that can consolidate expert knowledge, align it with the empirical literature, and produce a structured set of dimensions and indicators tailored to the local institutional environment.

Given the breadth of existing work—from foundational ratio-based prediction to contemporary anomaly- and governance-integrated models—there is also a practical need for conceptual clarity regarding which indicators belong to which dimension and how they should be interpreted in relation to business failure. Scientometric and content-analytic evidence indicates that the business failure field has expanded rapidly and now spans multiple disciplines, but the proliferation of constructs and measures can create fragmentation unless systematically synthesized (1). Moreover, evidence from governance failures in complex organizations underscores that bankruptcy often results from a constellation of breakdowns rather than a single cause, implying that indicator systems should be multi-dimensional and sensitive to interactions among governance quality, reporting behavior, and external shocks (13, 16). Methodological advances in data mining and variable selection further reinforce that robust prediction requires coherent indicator sets that balance richness with parsimony (6, 7). The classical insights that ratios predict failure remain valuable, but they are most informative when embedded in frameworks that account for strategic behavior, governance constraints, and the possibility of accounting distortions (2, 3).

In sum, contemporary management scholarship increasingly treats business failure as a multi-level, multi-mechanism process in which macroeconomic conditions, firm strategy, governance mechanisms, auditing structures, and accounting anomalies jointly shape distress trajectories and eventual bankruptcy outcomes. The convergence of evidence on macro drivers of risk (4), market-based distress pricing (5), multi-source prediction models (23), anomaly-based early warning signals (8-10), and governance-centered explanations (13-16, 18, 19) collectively indicates the need for a systematic identification and structuring of the dimensions, components, and indicators that can support early warning and preventive decision-making.

Accordingly, the aim of this study is to identify and systematize the dimensions, components, and indicators of business failure with emphasis on accounting anomaly indicators and corporate governance mechanisms.

Methods and Materials

The present study is qualitative in terms of research approach and applied in terms of research objective, and it was conducted using the thematic analysis method. The research population consisted of academic experts and specialists in the fields of accounting, finance, and corporate governance who possessed sufficient knowledge and expertise regarding the phenomenon of business failure. Participants were selected through purposive sampling based on criteria such as relevant academic or professional background, deep theoretical understanding of the subject, diversity of professional experiences, and willingness to cooperate. The sample size was not predetermined, and interviews were continued until theoretical saturation was achieved, such that after several consecutive interviews, no new concepts or themes emerged from the data. Accordingly, interviews were conducted with 12 participants. In order to ensure the credibility of the findings, strategies such as member checking and peer review of the coding and analysis process were employed to evaluate the degree of alignment between the researcher’s interpretations and the actual perspectives of the experts. Furthermore, to enhance the reliability of the data analysis, a subset of the interviews was independently coded by another researcher, and the level of agreement between the two coders was calculated using Cohen’s kappa coefficient, the results of which indicated acceptable reliability of the analyses. After conducting and audio-recording the interviews, the transcripts were fully transcribed, and data analysis was performed concurrently with data collection based on the principles of thematic analysis.

Findings and Results

With respect to work experience, 8% of the participants had less than 20 years of experience, 59% had between 20 and 30 years of experience, and 33% had more than 30 years of professional experience, indicating the high level of expertise of the majority of the study’s participants. In terms of gender, 17% of the participants were female and 83% were male.

Following the implementation of the open coding process, 46 open codes were extracted from the 12 conducted interviews, the results of which are presented in Table 1.

Table 1. Results of Open Coding

No.	Codes	Source of Codes
1	Economic conditions	P1, P2, P3, P4, P8, P11, P12

2	Political conditions	P1, P4, P7, P9, P10, P11, P12
3	Technology-related factors	P2, P3, P4, P7, P9, P10, P11, P12
4	Infrastructure	P1, P2, P5, P8, P11
5	Company customers	P1, P3, P4, P7, P9, P10, P11
6	Suppliers	P3, P6, P7, P10, P11, P12
7	Investment	P1, P2, P4, P6, P9, P10, P11
8	Managerial and employee skills	P1, P3, P4, P6, P7, P10, P12
9	Access to financial resources	P1, P2, P5, P6, P9, P11, P12
10	Firm flexibility in competitive conditions	P4, P5, P9, P11
11	Auditors' ability to provide accurate and unbiased evaluation of financial information	P2, P4, P7, P8, P9, P12
12	Auditor expertise	P2, P5, P6, P9, P12
13	Auditor tenure	P1, P2, P4, P7, P10
14	Auditor size	P1, P4, P7, P8, P10
15	Credibility and accuracy of audit results	P1, P2, P5, P6, P10, P12
16	Audited financial statements free from material misstatements	P1, P4, P7, P8
17	Public disclosure of reliable and timely information	P1, P3, P6, P9, P10, P11
18	Users' ability to conduct appropriate assessment of firm activities and risk position	P2, P3, P6, P8, P10, P11, P12
19	Reduction of information asymmetry between management and shareholders	P1, P2, P4, P7, P10
20	Enhancement of relevance and reliability of financial statements	P2, P5, P7, P8, P11
21	Market evaluation of detection and reporting of material misstatements by auditors	P3, P7, P8, P12
22	Level of compliance with corporate governance requirements in the audited entity	P1, P3, P5, P6, P8, P10
23	Degree of audit committee oversight of independent auditor performance	P1, P2, P6, P7, P10
24	Auditors' legal responsibilities in fraud detection	P2, P4, P7, P10, P12
25	Compliance with guidelines of certified auditors of the Stock Exchange Organization	P1, P4, P8, P11
26	Provisions of the disciplinary regulations for listed companies	P2, P4, P5, P7, P9
27	CEO chairmanship of the board of directors	P1, P3, P7, P11, P12
28	CEO serving as vice-chair of the board	P3, P4, P6, P7, P10, P12
29	Distribution of shares among company shareholders	P3, P8, P12
30	Percentage of ownership held by major shareholders	P1, P4, P7, P9, P12
31	Shareholder structure	P2, P6, P8, P12
32	Situations where a small number of large shareholders control a substantial portion of shares	P1, P2, P3, P6, P7, P9, P10, P11
33	Internal managers responsible for executive management of the firm	P2, P3, P6, P8, P10
34	Absence of collusion between non-executive and executive directors	P4, P7, P10, P11, P12
35	Impact of executive directors on firm performance decline	P1, P5, P7, P9
36	Impact of non-executive directors on firm performance decline	P1, P4, P6, P7, P8, P11
37	Directors without executive responsibilities who only participate in decision-making	P2, P6, P8, P11, P12
38	Optimal number of board members	P3, P5, P6, P10
39	Presence of non-executive directors on the board	P4, P10
40	Presence of individual shareholders	P1, P2, P5, P6, P8, P9, P12
41	High ownership concentration within a single family and their presence on the board	P1, P6, P8, P9, P10
42	Presence of a family on the board of directors	P4, P7, P8, P12
43	Effects of family shareholders on intensifying agency problems	P2, P3, P6, P9
44	Number of outstanding shares	P2, P3, P6, P9
45	Generation of financial returns	P1, P2, P5, P8
46	Economic benefits of firm-owned resources	P2, P4, P6, P10
47	Accrual-based earnings management	P1, P7, P10, P12
48	Real activities-based earnings management	P1, P3, P4, P6, P7, P9, P12
49	Income smoothing	P2, P3, P5, P6, P8, P11
50	Firm asset level	P3, P7, P9, P10
51	Ratio of book value of assets to market value of company shares	P2, P6, P9, P11
52	Allocation of financial resources	P3, P5, P10
53	Credit acquisition and medium- and long-term borrowing	P1, P5, P11, P12
54	Informational, operational, and governance complexity of the firm	P1, P2, P6
55	Mispricing of company shares	P2, P7, P10, P12
56	Abnormally low returns	P1, P8, P11

In the subsequent stage of analysis, axial coding was performed, and the relationships among categories were specified in the form of 17 components, as presented in Table 2.

Table 2. Results of Axial Coding and Extraction of Business Failure Prediction Components Using Accounting Anomaly Indicators and Corporate Governance

Components	Indicators
Macro-Level Business Failure Components	Economic conditions
	Political conditions
	Technology-related factors
	Infrastructure
Organizational-Level Business Failure Components	Company customers
	Suppliers
	Investment
	Managerial and employee skills
	Access to financial resources
	Firm flexibility under competitive conditions
Auditor-Specific Characteristics	Auditors’ ability to provide accurate and unbiased evaluation of financial information
	Auditor expertise
	Auditor tenure
	Auditor size
Audit Process	Credibility and accuracy of audit results
	Audited financial statements free from material misstatements
	Public disclosure of reliable and timely information
Audit Outcomes	Users’ ability to appropriately assess firm activities and risk position
	Reduction of information asymmetry between management and shareholders
	Enhancement of relevance and reliability of financial statements
	Market evaluation of auditors’ detection and reporting of material misstatements
	Level of compliance with corporate governance requirements in the audited entity
	Degree of audit committee oversight of independent auditor performance
	Auditors’ legal responsibilities in fraud detection
	Compliance with guidelines of certified auditors of the Stock Exchange Organization
	Provisions of the disciplinary regulations for listed companies
Role Duality	CEO serving as chair of the board of directors
	CEO serving as vice-chair of the board of directors
Ownership Concentration	Distribution of shares among shareholders
	Percentage of ownership held by major shareholders
	Shareholder structure
	Situations where a small number of major shareholders hold a substantial portion of shares
Board Independence	Internal executive directors responsible for firm operations
	Absence of collusion between non-executive and executive directors
	Impact of executive directors on decline in firm performance
	Impact of non-executive directors on decline in firm performance
	Directors without executive responsibilities participating solely in decision-making
Board Size	Optimal number of board members
	Presence of non-executive directors on the board
Institutional Ownership	Presence of individual shareholders
	High ownership concentration by a single family and/or their presence on the board
	Presence of a family on the board of directors
	Effects of family ownership on intensification of agency problems
Number of Shares	Number of outstanding shares
Profitability	Generation of financial returns
Asset Growth	Economic benefits of firm-owned resources
Earnings Management	Accrual-based earnings management
	Real activities-based earnings management
	Income smoothing
Firm Size	Level of firm assets
Book-to-Market Ratio	Book value of assets relative to market value of company shares

Investments	Allocation of financial resources
Financing	Credit acquisition and medium- and long-term borrowing
Market Efficiency	Informational, operational, and governance complexity of the firm Mispricing of company shares Abnormally low returns

At the final stage, based on the results of open coding and axial coding, the extracted components were organized into 10 corporate governance components and 9 accounting anomaly components for the purpose of predicting business failure, as presented in Table 3.

Table 3. Results of Selective Coding

Dimension	Components	Indicators
Business Failure	1. Macro-Level Business Failure Components	Economic conditions; Political conditions; Technology-related factors; Infrastructure
	2. Organizational-Level Business Failure Components	Company customers; Suppliers; Investment; Managerial and employee skills; Access to financial resources; Firm flexibility under competitive conditions
Corporate Governance	3. Auditor-Specific Characteristics	Auditors' ability to provide accurate and unbiased evaluation of financial information; Auditor expertise; Auditor tenure; Auditor size
	4. Audit Process	Credibility and accuracy of audit results; Audited financial statements free from material misstatements; Public disclosure of reliable and timely information
	5. Audit Outcomes	Users' appropriate assessment of firm activities and risk; Reduction of information asymmetry; Enhanced relevance and reliability of financial statements; Market evaluation of detected misstatements; Compliance with corporate governance requirements; Audit committee oversight; Auditors' legal responsibilities in fraud detection; Compliance with Stock Exchange auditing guidelines; Disciplinary regulations of listed companies
	6. Role Duality	CEO serving as chair of the board; CEO serving as vice-chair
	7. Ownership Concentration	Distribution of shares; Ownership percentage of major shareholders; Shareholder structure; High ownership concentration by few major shareholders
	8. Board Independence	Executive directors' influence; Non-executive directors' independence; Impact of directors on performance decline; Decision-making participation of non-executive directors
	9. Board Size	Optimal board size; Presence of non-executive directors
	10. Institutional Ownership	Presence of individual shareholders; Family ownership concentration; Family presence on the board; Agency problems intensified by family ownership
Accounting Anomalies	11. Number of Shares	Number of outstanding shares
	12. Profitability	Generation of financial returns
	13. Asset Growth	Economic benefits of firm-owned resources
	14. Earnings Management	Accrual-based earnings management; Real activities-based earnings management; Income smoothing
	15. Firm Size	Level of firm assets
	16. Book-to-Market Ratio	Book value relative to market value of company shares
	17. Investments	Allocation of financial resources
	18. Financing	Credit acquisition; Medium- and long-term borrowing
	19. Market Efficiency	Informational, operational, and governance complexity; Share mispricing; Abnormally low returns

Based on the results presented in the tables, the corporate governance dimensions include macro-level business failure components, organizational-level business failure components, auditor-specific characteristics, audit process, audit outcomes, role duality, ownership concentration, board independence, board size, and institutional ownership, while the accounting anomaly dimension consists of number of shares, profitability, asset growth, earnings management, firm size, book-to-market ratio, investments, financing, and market efficiency.

Discussion and Conclusion

The findings of the present study provide strong empirical and conceptual support for viewing business failure as a multidimensional phenomenon that emerges from the dynamic interaction of macro-level conditions, organizational capabilities, corporate governance structures, and accounting anomaly indicators. The extracted framework, consisting of 10 corporate governance components and 9 accounting anomaly components, reflects the complexity and layered nature of failure processes that contemporary management scholarship increasingly emphasizes. This result is consistent with the expanding scope of the business failure literature, which demonstrates that bankruptcy and organizational collapse cannot be explained solely by financial ratios but require integrated consideration of governance mechanisms, strategic behavior, and environmental context (1).

At the macro level, the prominence of economic conditions, political environment, technological change, and infrastructure as failure-related components aligns closely with evidence that macroeconomic dynamics significantly shape firm-level credit risk and distress outcomes (4). Economic volatility and political uncertainty intensify financing constraints, weaken demand stability, and increase default probabilities, particularly in emerging markets where institutional buffers are less robust. The present study's identification of technology-related factors further supports the argument that failure risk is increasingly tied to firms' ability to adapt to technological disruption, which can alter competitive positioning and cost structures. This perspective complements broader distress-risk research showing that macro-level uncertainty and market conditions are priced by investors and reflected in expected returns, indicating that macro conditions are fundamental to distress dynamics (5).

At the organizational level, the importance of customers, suppliers, investment decisions, managerial and employee skills, access to financial resources, and competitive flexibility illustrates how internal capabilities function as critical buffers or amplifiers of external shocks. Firms with weak customer relationships, fragile supply chains, limited managerial competence, and restricted access to finance are structurally more vulnerable to distress. These findings align with multi-source bankruptcy prediction models that demonstrate improved predictive power when firm-level operational and financial indicators are jointly considered with market and macro variables (23). The emphasis on competitive flexibility also resonates with strategic management research that identifies adaptability and resource reconfiguration as key determinants of organizational survival under uncertainty.

A central contribution of this study lies in the articulation of accounting anomaly indicators as core elements of the failure prediction architecture. Components such as earnings management, abnormal returns, asset growth patterns, profitability distortions, mispricing, and book-to-market deviations are not merely statistical artifacts; they represent behavioral and informational signals that often precede observable financial collapse. This interpretation is directly supported by evidence that accounting anomalies serve as early warning signals of business failure (8). Moreover, the integration of institutional trading and information processing into anomaly dynamics highlights how these signals propagate through markets and influence investor perception of firm risk (9). The present study's results reinforce the proposition that accounting anomalies reflect underlying governance and strategic problems rather than isolated accounting events.

The centrality of earnings management within the extracted framework further confirms its pivotal role in distress trajectories. Accrual-based manipulation, real activities management, and income smoothing can delay the recognition of financial problems, weaken the reliability of financial statements, and distort decision-making by both internal managers and external stakeholders. This finding is strongly aligned with empirical evidence showing that earnings management significantly affects bankruptcy prediction and that manipulated earnings obscure the firm's true financial condition until distress becomes severe (11). The nonlinear interaction between earnings management and business strategy identified in prior work also provides important explanatory context for the present findings, as it suggests that the same reporting behavior can have different implications for failure risk depending on the firm's strategic posture and competitive environment (12).

Corporate governance emerged in this study as a dominant explanatory dimension shaping both accounting behavior and failure risk. The extracted components—auditor characteristics, audit process, audit outcomes, role duality, ownership concentration, board independence, board size, and institutional ownership—collectively illustrate how governance architecture conditions managerial incentives and constrains opportunistic behavior. This structure is highly consistent with empirical evidence from emerging markets showing that strong governance mechanisms are associated with lower financial distress and greater organizational resilience (13). In the Iranian context, the interaction between governance mechanisms and bankruptcy risk has been demonstrated empirically, with governance quality significantly moderating the impact of managerial practices such as tax avoidance on distress outcomes (14).

The prominence of auditor-specific characteristics and audit processes in the framework underscores the critical role of external monitoring in the early detection and prevention of failure. High-quality auditing enhances information credibility, reduces information asymmetry, and strengthens market discipline. This finding aligns with organizational accounting research emphasizing that cost behavior, reporting patterns, and managerial adjustments are deeply embedded in organizational structures and cannot be reliably interpreted without strong governance and assurance mechanisms (17). The present study therefore supports the view that auditing is not merely a compliance function but a strategic governance instrument that shapes the firm's vulnerability to failure.

Ownership structure and board characteristics also appear as decisive governance mechanisms in the extracted model. Ownership concentration, family control, board independence, and role duality influence strategic decision-making, risk tolerance, and monitoring effectiveness. These results are consistent with evidence that governance failures—especially in organizations with complex ownership and political constraints—can directly precipitate bankruptcy by weakening accountability and delaying corrective intervention (16). The moderating effect of capital structure on the relationship between governance mechanisms and firm value further contextualizes these findings, indicating that governance and financial policy are jointly determined and together shape distress risk (18).

The inclusion of sustainability-related governance considerations within the broader governance dimension reinforces the strategic nature of governance in shaping long-term survival. Evidence from leading energy firms demonstrates that governance quality directly affects sustainable performance and risk management (19). Although sustainability is conceptually distinct from bankruptcy, the present findings suggest that both are governed by overlapping mechanisms of accountability, transparency, and strategic foresight. Firms that fail to establish robust governance structures are therefore exposed not only to environmental and social risks but also to heightened financial vulnerability.

From a predictive perspective, the present framework reflects a significant departure from classical ratio-only models. While early foundational research demonstrated the predictive value of financial ratios (2, 3), subsequent advances in data mining and variable selection indicate that predictive accuracy improves substantially when models incorporate governance indicators, accounting anomalies, and macro-level variables (6, 7). The current study operationalizes this integrative logic by providing a structured, theory-driven set of components that can be translated into advanced predictive models.

Furthermore, the study's alignment with recent applied research on bankruptcy prediction models that combine corporate governance mechanisms and financial ratios confirms its practical relevance for emerging markets (15). By embedding accounting anomalies within a governance-centered framework, the present model addresses a critical gap in the literature: the need for early warning systems that are sensitive to both behavioral distortions in reporting and structural weaknesses in governance. This integrated perspective is essential for regulators, auditors, boards, and policymakers seeking to design preventive interventions rather than reactive crisis management strategies.

Overall, the findings strongly support the theoretical proposition that business failure is the cumulative outcome of interacting financial, behavioral, governance, and environmental mechanisms. The present study contributes to management theory by synthesizing these mechanisms into a coherent predictive architecture and to management practice by identifying concrete dimensions and indicators that can guide risk assessment, governance reform, and strategic oversight.

One limitation of this study is that it relies on expert interviews and qualitative thematic analysis, which, while rich in conceptual insight, may limit the generalizability of the findings across different institutional and industrial contexts. Another limitation is the absence of quantitative validation of the extracted framework, which restricts direct comparison of the predictive power of the identified components with existing statistical models. Additionally, the study's focus on a specific national context may constrain the applicability of the results to environments with different regulatory structures, ownership patterns, and market dynamics.

Future research should empirically test the proposed framework using large-scale longitudinal datasets to evaluate its predictive accuracy relative to traditional ratio-based and machine-learning models. Comparative studies across countries and industries would further clarify the contextual robustness of the identified components. Researchers should also investigate causal pathways among governance mechanisms, accounting anomalies, and failure outcomes using structural equation modeling and dynamic panel approaches. Finally, integrating behavioral data from executives, auditors, and investors could deepen understanding of the micro-level processes that drive the emergence of accounting anomalies and governance breakdowns.

Managers and boards should adopt multi-dimensional early warning systems that combine governance indicators with accounting anomaly signals and macroeconomic monitoring. Regulators should strengthen governance and auditing standards to enhance transparency and reduce the likelihood of opportunistic reporting. Auditors and audit committees should focus more explicitly on detecting anomaly patterns that may indicate emerging distress. Investors and creditors should incorporate governance quality and anomaly-based indicators into risk assessment and valuation decisions to improve capital allocation and mitigate exposure to failure.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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