Presenting an Investment Decision-Making Model in the Financing Market Considering Information Distortion (A Case Study of Knowledge-Based Companies)

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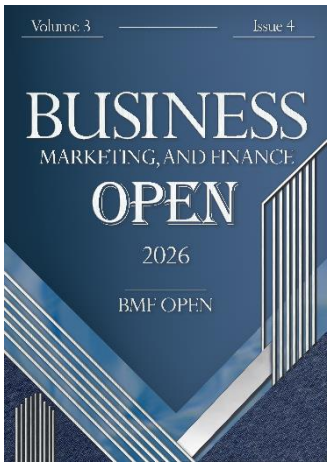

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Abstract: This study aims to present an investment decision-making model in the financing market by considering information distortion and identifying causal, contextual, and intervening conditions in knowledge-based companies. The research employs a mixed-methods approach (qualitative and quantitative). In the qualitative phase, the statistical population comprised theoretical experts (university faculty members) and experiential experts; 17 participants were selected through snowball sampling, and data were collected via in-depth interviews. In the quantitative phase, the statistical population consisted of accountants and auditors. Qualitative data were analyzed using grounded theory with open, axial, and selective coding, while quantitative data were analyzed using the Partial Least Squares (PLS) method. The findings indicate that analysis of the interviews yielded 239 initial concepts, which were ultimately condensed into 84 subcomponents and 12 main categories, organized within six paradigms: causal conditions (organizational and individual pressures, structural and legal weaknesses), contextual conditions (economic and financial environment, organizational characteristics), intervening conditions (reporting system, characteristics of investors and analysts), the core category (information distortion), strategies, and outcomes. Quantitative results also confirmed the relationships among these factors and the role of information distortion in investment decision-making. Information distortion in knowledge-based companies is shaped by environmental, organizational, and individual factors and can significantly influence investment decisions. Identifying these factors can help improve investors' decision-making processes and reduce risks arising from non-transparent information.

Keywords: Investment decision-making model; financing market; information distortion; grounded theory.

1. Introduction

Investment decision-making under conditions of information uncertainty has long been recognized as one of the central challenges in financial markets. Classical financial theory assumes that investors operate with full and symmetric information, enabling rational valuation of assets and efficient allocation of capital. However, empirical evidence increasingly demonstrates that real-world financial markets are characterized by pervasive information asymmetry, strategic disclosure, and, in some cases, deliberate information distortion, all of which substantially influence investor behavior and market outcomes [1, 2]. These issues become even more pronounced in emerging financing

mechanisms and innovation-driven contexts, where tangible historical data are limited and valuation relies heavily on narratives, projections, and qualitative signals.

Information asymmetry affects investment decisions by altering perceptions of risk, expected returns, and credibility of issuers. When investors lack access to accurate or complete information, they may demand higher returns, reduce investment participation, or rely on heuristic cues rather than fundamentals [2, 3]. This phenomenon has been widely studied in traditional capital markets, yet its implications are magnified in financing environments dominated by intangible assets, innovation uncertainty, and managerial discretion, such as knowledge-based firms, venture capital markets, and crowdfunding platforms [4, 5].

Knowledge-based companies represent a distinct category of firms whose value creation depends primarily on intangible assets, intellectual capital, innovation capabilities, and specialized human resources. These characteristics inherently complicate financial reporting and valuation, as many critical value drivers are not fully recognized in conventional accounting systems [6, 7]. Consequently, investors in such firms are often exposed to heightened information asymmetry, making them more vulnerable to biased disclosures, selective reporting, and narrative manipulation [8, 9]. This structural opacity creates fertile ground for information distortion, whether intentional or unintentional, and directly affects investment decision-making processes.

Prior research has extensively examined earnings management, misrepresentation, and financial information distortion as mechanisms through which firms influence stakeholder perceptions. Studies on accounting misstatements and earnings manipulation show that managers may strategically alter reported figures to meet benchmarks, attract financing, or mask poor performance [10, 11]. Detection-oriented research has further demonstrated that distorted information can be identified through accrual-based models, forensic analytics, and linguistic analysis of financial disclosures [12-14]. Nevertheless, while detection techniques have advanced, less attention has been paid to how such distortions interact with investor cognition and decision-making in financing markets.

Behavioral finance literature provides important insights into how investors process distorted or incomplete information. Rather than relying solely on quantitative indicators, investors frequently use peripheral cues, narratives, tone, and social signals when making investment decisions, particularly in uncertain environments [15, 16]. Linguistic features of disclosures, including readability, tone, and deceptive language patterns, have been shown to significantly influence investor judgments, often amplifying the impact of distorted information [17-19]. These findings suggest that information distortion operates not only through numerical manipulation but also through strategic communication.

Financing markets such as equity crowdfunding and alternative investment platforms further intensify these dynamics. In these settings, investors typically have limited ability to conduct due diligence and must rely on self-reported information provided by project owners. Research indicates that signaling behavior, herding effects, and discretionary tone play a critical role in shaping funding outcomes, sometimes blurring the line between persuasive communication and misrepresentation [16, 20, 21]. The coexistence of legitimate signaling and deceptive practices complicates regulatory oversight and raises concerns about investor protection.

From a theoretical perspective, investment under uncertainty has been analyzed through frameworks such as real options theory and irreversible investment models, which emphasize managerial flexibility and the value of waiting in uncertain environments [22, 23]. While these models account for uncertainty in cash flows and market conditions, they often abstract from informational distortions and behavioral biases that shape investor expectations. Integrating insights from accounting, behavioral finance, and information economics is therefore

essential for developing a more comprehensive understanding of investment decision-making in contemporary financing markets [24, 25].

Empirical studies in emerging markets further underscore the importance of disclosure quality and information transparency. Research conducted in the Tehran Stock Exchange, for example, demonstrates that higher disclosure quality and intellectual capital reporting reduce information asymmetry, improve liquidity, and lower the cost of capital [26-28]. Conversely, economic policy uncertainty and weak regulatory environments exacerbate asymmetric information and distort investor reactions to financial announcements [29]. These findings highlight the contextual role of institutional and environmental factors in shaping the effects of information distortion.

Ownership structure and corporate governance mechanisms have also been shown to influence the extent of earnings management and disclosure practices. Concentrated ownership, managerial incentives, and weak oversight can increase the likelihood of opportunistic reporting behavior, particularly in firms with complex operations and intangible assets [30, 31]. In knowledge-based companies, where performance metrics are less standardized, these governance challenges become even more salient, reinforcing the need for robust monitoring and reporting systems.

Despite the growing body of literature on information asymmetry, disclosure quality, and behavioral responses, several gaps remain. First, much of the existing research focuses on either the detection of distorted information or its isolated effects on market outcomes, without integrating these insights into a coherent decision-making framework. Second, studies often examine investors or firms separately, neglecting the interactive dynamics between organizational pressures, environmental conditions, reporting systems, and investor characteristics. Third, there is limited research that explicitly contextualizes these relationships within knowledge-based companies operating in financing markets, where uncertainty and informational opacity are structurally embedded [32, 33].

Recent advances in the analysis of financial narratives and fraud detection underscore the importance of developing integrative models that capture both quantitative and qualitative dimensions of information distortion. Machine learning and linguistic approaches have enhanced our ability to identify deceptive patterns, yet their implications for strategic decision-making and investment behavior require further theoretical grounding [13, 34, 35]. Moreover, ethical considerations surrounding disclosure practices and investor protection have gained prominence, particularly in light of high-profile fraud cases in alternative financing markets [21, 36].

Against this backdrop, there is a clear need for a comprehensive, context-sensitive model that explains how information distortion emerges, how it is shaped by organizational, environmental, and individual factors, and how it ultimately affects investment decision-making in financing markets. Such a model should move beyond fragmented analyses and provide an integrated perspective that is empirically grounded and theoretically informed. By adopting a mixed-methods approach, it becomes possible to uncover the causal conditions, contextual factors, and intervening mechanisms that link distorted information to investment outcomes, thereby contributing to both academic knowledge and practical decision-making [37, 38].

Accordingly, the present study aims to develop and validate a comprehensive investment decision-making model in financing markets by explicitly accounting for information distortion and identifying its causal, contextual, and intervening conditions in knowledge-based companies.

2. Methodology

The methodology of this study is based on a mixed-methods research approach, comprising two qualitative and quantitative phases. In the first phase, the qualitative component of the study was conducted using the grounded

theory strategy and semi-structured interviews. The data obtained from these interviews were analyzed through a systematic coding process in order to extract the initial conceptual model of the study. In the second phase, the resulting model was tested and validated using the Partial Least Squares (PLS) method based on data collected through a questionnaire. This two-stage approach enabled a precise examination of the relationships among the model variables and facilitated the development of the final research framework. Accordingly, the present study integrates qualitative and quantitative analyses, and its implementation was designed in a systematic manner in accordance with scientific research requirements.

The research process was designed based on an inductive and goal-oriented approach, enabling a systematic progression from empirical data toward the formation of a theoretical framework and the realization of the research objectives. The research method is mixed (qualitative–quantitative) and was carried out through the integration of a qualitative grounded theory approach and a quantitative descriptive–survey method. In the first stage, which adopted a qualitative approach, in-depth and semi-structured interviews were conducted with experts in the fields of accounting and finance in order to extract an initial investment decision-making model for the financing market. The participating experts consisted of two groups: theoretical experts selected from among faculty members and academic researchers holding master's or doctoral degrees with a معتبر academic background, and experiential experts including financial advisors and accountants with at least fifteen years of professional experience. The identification and selection of these individuals were carried out using the snowball sampling method, and ultimately approximately 10 to 15 participants were selected as the qualitative sample. In the second stage, which followed a quantitative and descriptive–survey approach, the extracted decision-making model was tested and validated based on data collected through a researcher-developed questionnaire to ensure its robustness and generalizability. The statistical population in the quantitative section included all accountants and auditors active in the financial sector, and due to the unknown exact number of active businesses, the sample size was estimated using Cochran's formula. Thus, this study progressed in a structured manner grounded in academic research principles through the design of two complementary qualitative and quantitative phases and the use of scientific tools and valid data collection and analysis methods.

The nature of Cochran's formula is such that for large values of N, it yields a sample size between 380 and a maximum of 384 respondents. For example, if the population size increases from 30,000 to 3,000,000, the required sample size increases only from 380 to 384.

$$\lim_{N\to\infty} n = 384$$

Development of the Interview Protocol: This stage represents the most fundamental and time-consuming component of the interview process, requiring substantial effort from the researcher and necessitating its division into two smaller phases.

At the initial stage of the interview process, the researcher is required to employ a precise and pre-designed strategy for self-introduction and for explaining the research topic, as the manner in which the researcher presents their identity and the study's objectives can play a decisive role in shaping the interviewee's initial perception and attitude. This perception, whether positive or negative, directly affects the quality and depth of the data collected. Accordingly, the introduction protocol must include key elements such as assurances regarding data confidentiality, obtaining informed consent from participants, explaining the possibility of withdrawal from the interview at any stage, and clarifying the scope of application and dissemination of the research results. In addition, the manner of formulating questions is of particular importance, as questions that lack precision or clarity, or that

are not properly aligned with the research objectives, may lead to incomplete or misleading responses. Therefore, prior to conducting the interview, the researcher should provide a brief and purposeful overview of findings from prior studies so that the logical connection between the interview questions and the theoretical framework of the research becomes clear to the interviewee. In essence, a scientific, coherent, and well-planned interview protocol not only ensures transparency and consistency in the data collection process but also enhances participants' trust and active cooperation, ultimately improving the quality of the qualitative data.

In the quantitative phase of this study, the data collection instrument was designed and developed based on the findings of the qualitative phase and the results obtained from in-depth expert interviews, ensuring that the questionnaire items accurately reflected the concepts and constructs derived from the primary data. To assess and confirm the content validity of the questionnaire, the Content Validity Ratio (CVR) and the Content Validity Index (CVI) were employed. This process was carried out based on the expert judgments of ten specialists familiar with the research domain, ensuring that the items possessed sufficient scientific validity in terms of clarity, necessity, and relevance to the constructs being measured. After confirming content validity, the initial version of the questionnaire was administered to a pilot sample of 30 respondents from the target population to evaluate the reliability of the measurement instrument. At this stage, internal consistency was assessed by calculating Cronbach's alpha coefficient, and based on the results obtained, the necessary revisions and modifications were applied to the questionnaire. In the final step, the revised and finalized version of the questionnaire was used as the official instrument for statistical data collection and was administered to the selected sample to provide the data required for validating the conceptual model of the study and testing the research hypotheses.

3. Findings and Results

Table 1 presents demographic information about the individuals who participated in this study. This information includes gender, age, educational attainment, and work experience of the experts. The demographic characteristics of the experts are presented in the table below.

Table 1. Demographic Characteristics of Experts

Demographic Characteristics	Category	Frequency	Percentage
Gender	Male	14	82
	Female	3	18
Age	Under 35 years	8	47
	35–45 years	7	42
	45 years and above	2	11
Education	Master's degree	10	58
	Doctorate	7	42
Work experience	10–20 years	7	42
	Above 20 years	10	58
Total		17	100

Out of the 17 participants, 14 individuals (82.0%) were male and 3 individuals (18.0%) were female. This indicates a predominance of males in the examined sample, which may be related to cultural, social, or professional factors. The highest frequency was observed in the under-35 age group with 8 participants (47.0%). This was followed by

7 participants (42.0%) in the 35–45 age group, while only 2 participants (11.0%) were aged 45 years or older. This age distribution reflects the relative youthfulness of the expert population and may indicate a tendency toward innovation and new perspectives across various domains. In terms of education, 10 participants (58.0%) held a master's degree and 7 participants (42.0%) held a doctoral degree. This distribution indicates a high level of educational attainment among the experts, which can positively influence the quality and credibility of their opinions and findings. Regarding work experience, 7 participants (42.0%) had between 10 and 20 years of experience, while 10 participants (58.0%) had more than 20 years of professional experience. This distribution demonstrates a high level of expertise in relevant fields, contributing to the credibility and reliability of their judgments.

Assessing the fit of the measurement model is one of the fundamental and decisive stages in the process of Structural Equation Modeling (SEM) and plays a critical role in evaluating the quality of research constructs. The purpose of this stage is to ensure the reliability and validity of indicators and latent variables so that the accuracy and credibility of the results obtained from the structural model can be guaranteed. In this process, the researcher evaluates a set of statistical and analytical indices to assess the adequacy of the relationships between observed variables and latent constructs. The most important criteria employed at this stage include factor loadings, which indicate the degree of association between each indicator and its corresponding construct; Cronbach's alpha as an index of internal consistency and measurement stability; composite reliability to assess the overall consistency of items within a construct; and finally, the Average Variance Extracted (AVE), which reflects the proportion of variance explained by the indicators of each construct. A careful examination of these indices enables the identification of weak or inefficient items, enhances internal consistency of constructs, and improves the validity of the measurement instrument, thereby providing the necessary foundation for developing a reliable and interpretable structural model.

Factor loadings are statistical indices that explain the strength and direction of the relationship between latent variables and observed (measured) variables and play an important role in evaluating the quality of the measurement model. These coefficients indicate the extent to which each indicator or item is capable of representing and explaining the intended latent construct. In other words, the magnitude of a factor loading provides a measure of explanatory power and the degree of shared variance between an observed variable and a latent construct. In structural equation analyses, a factor loading value of 0.40 or higher is generally considered acceptable; that is, indicators with loadings below this threshold may not adequately represent the construct and may require removal or revision. Conversely, factor loadings greater than 0.40 indicate meaningful and stable relationships between variables and suggest that the indicator contributes significantly to explaining the latent construct. A careful examination of these coefficients at the measurement model fitting stage is essential to ensure the quality of the measurement instrument and to enhance the construct validity of the study.

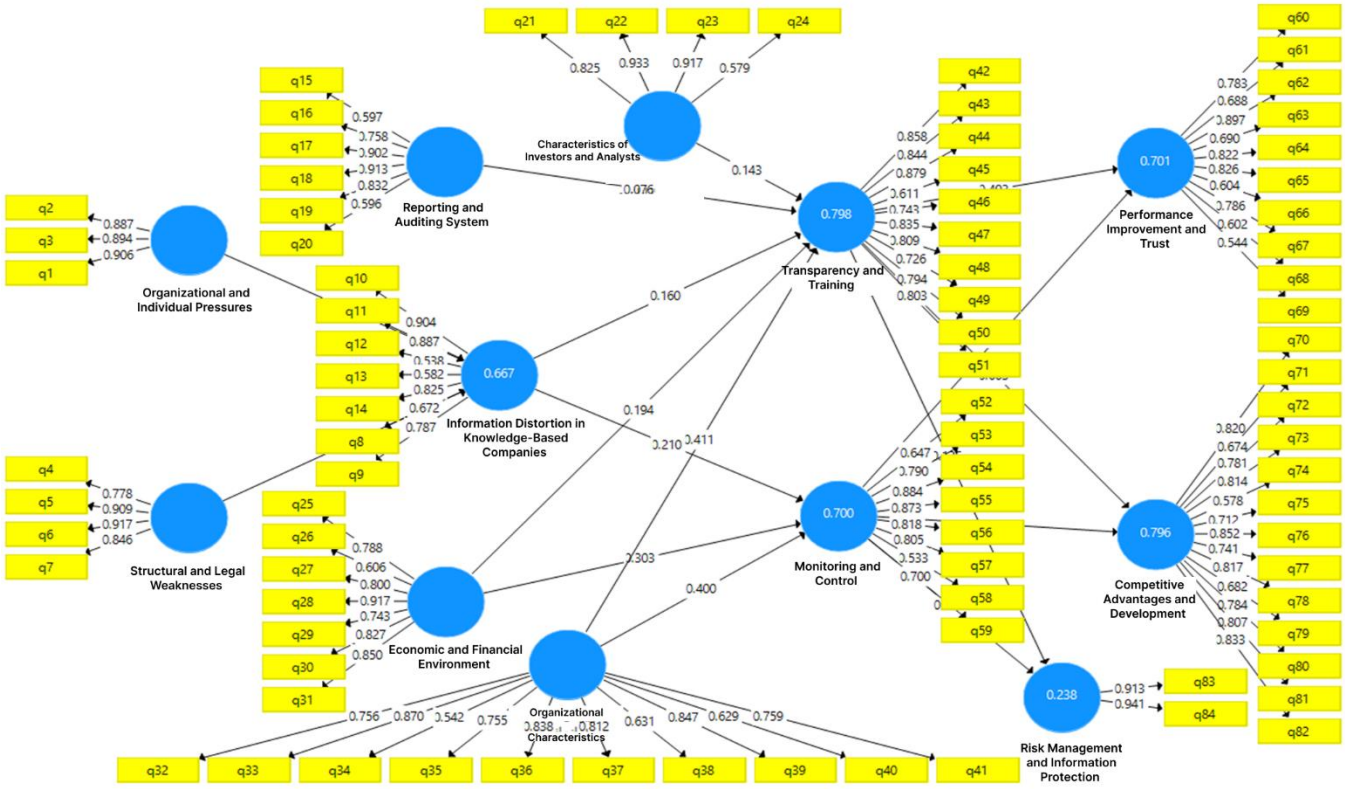

Figure 1. Measurement Model in the Significance Estimation State of Coefficients

As shown in the figure above, all factor loading coefficients are above 0.40; therefore, the constructs demonstrate acceptable reliability.

Cronbach's alpha is an index used to assess the reliability and internal consistency of measurement instruments and indicates the extent to which questionnaire items are coherent and correlated in measuring a single construct. The value of this coefficient ranges from 0 to 1, with values closer to 1 indicating higher reliability. Generally, values above 0.70 are considered indicative of acceptable and desirable reliability, whereas lower values may suggest the need to revise or remove inappropriate items.

Ringle et al. (2015) introduced the RHO_A coefficient to address criticisms directed at Pearson correlation coefficients used in Cronbach's alpha and composite reliability. This coefficient measures correlations among Likert-scale indicators as ordinal measures to confirm model reliability from different perspectives. To demonstrate that the scale type does not affect reliability, the Spearman correlation among items should exceed 0.70.

Table 2. Validity and Reliability Values of Research Variables

Components	Cronbach's Alpha	RHO_A	Composite Reliability	Average Variance Extracted (AVE)
Performance Improvement and Trust	0.900	0.915	0.919	0.537
Information Distortion in Knowledge-Based Companies	0.866	0.897	0.900	0.569
Transparency and Training	0.934	0.942	0.944	0.630
Structural and Legal Weaknesses	0.886	0.903	0.921	0.747
Organizational and Individual Pressures	0.888	0.995	0.924	0.803
Economic and Financial Environment	0.901	0.918	0.922	0.632
Risk Management and Information Protection	0.837	0.858	0.924	0.859
Competitive Advantages and Development	0.940	0.946	0.948	0.585
Monitoring and Control	0.894	0.908	0.917	0.584
Reporting and Auditing System	0.862	0.899	0.899	0.604

Organizational Characteristics	0.911	0.926	0.927	0.564
Characteristics of Investors and Analysts	0.835	0.877	0.893	0.682

Based on Table 2, which reports the validity and reliability values of the research variables, several important points can be noted. First, Cronbach's alpha values for all components exceed 0.70, indicating good reliability of the measurement instrument. For example, the component "Transparency and Training" has the highest Cronbach's alpha (0.934), suggesting that its items are highly intercorrelated and effectively measure a common construct. In contrast, the component "Characteristics of Investors and Analysts" has the lowest Cronbach's alpha (0.835), which nonetheless remains within the acceptable range. Second, composite reliability values for all components are also above 0.70 and are largely consistent with the Cronbach's alpha results. This indicates strong relationships between latent variables and observed indicators and confirms satisfactory scale reliability. For instance, the component "Competitive Advantages and Development," with a composite reliability of 0.948, demonstrates the highest level of correlation and model reliability. Third, the Average Variance Extracted (AVE) for all components exceeds 0.50, meaning that more than half of the variance in observed variables is explained by the corresponding latent construct. This finding is particularly important for confirming the convergent validity of the model. Specifically, the component "Risk Management and Information Protection" exhibits the highest AVE (0.859), indicating very strong explanatory power for the variance of observed variables. Finally, the RHO-A coefficient, a more recent measure of reliability, is also above 0.70 for all components, indicating that model reliability is confirmed from multiple perspectives. The RHO-A value for "Organizational and Individual Pressures" is 0.995, which is close to one and reflects exceptionally high stability and strong validity of this component.

The R^2 criterion (coefficient of determination), as one of the most important measures in structural equation modeling, indicates the proportion of variance in the dependent variable explained by the independent variables. This coefficient ranges from 0 to 1, with values closer to 1 indicating greater explanatory power. Values of 0.19, 0.33, and 0.67 are commonly interpreted as weak, moderate, and strong explanatory power, respectively.

Table 3. Coefficient of Determination

Construct	R Square	Adjusted R Square
Performance Improvement and Trust	0.701	0.700
Information Distortion in Knowledge-Based Companies	0.667	0.665
Transparency and Training	0.797	0.795
Risk Management and Information Protection	0.238	0.234
Competitive Advantages and Development	0.796	0.795
Monitoring and Control	0.703	0.699

Table 3 presents the values of the coefficient of determination (R^2) and adjusted R^2 for the various constructs in the study, which are key indicators in structural equation modeling and reflect the extent to which variance in dependent variables is explained by independent variables. Based on the reported values, most constructs exhibit R^2 values above 0.66, indicating moderate to strong explanatory power of the model. For example, the constructs "Transparency and Training" ($R^2 = 0.797$) and "Competitive Advantages and Development" ($R^2 = 0.796$) show the highest explanatory power, suggesting that approximately 80% of the variance in these constructs is explained by the model factors. Similarly, "Performance Improvement and Trust" and "Monitoring and Control," with values around 0.70, also demonstrate strong explanatory capacity. Only the construct "Risk Management and Information Protection," with an R^2 of 0.238, falls within the weak range, indicating relatively low explanatory power of the

model for this variable. Overall, these results indicate acceptable model validity in explaining the dependent variables of the study.

The Q^2 criterion (Stone–Geisser's criterion) is used to assess the predictive relevance of the model. For a dependent variable, three benchmark values of 0.02, 0.15, and 0.35 are commonly considered, indicating weak, moderate, and strong predictive power of the independent variable for the dependent variable, respectively.

Table 4. Stone–Geisser Criterion (Q^2)

Construct	SSO	SSE	Q^2 (= 1 − SSE/SSO)
Performance Improvement and Trust	3,840.000	2,501.870	0.348
Information Distortion in Knowledge-Based Companies	2,688.000	1,743.504	0.351
Transparency and Training	3,840.000	2,058.198	0.464
Structural and Legal Weaknesses	1,536.000	1,536.000	0.000
Organizational and Individual Pressures	1,152.000	1,152.000	0.000
Economic and Financial Environment	2,688.000	2,688.000	0.000
Risk Management and Information Protection	768.000	619.282	0.194
Competitive Advantages and Development	4,992.000	2,839.418	0.431
Monitoring and Control	3,072.000	1,902.719	0.381
Reporting and Auditing System	2,304.000	2,304.000	0.000
Organizational Characteristics	3,840.000	3,840.000	0.000
Characteristics of Investors and Analysts	1,536.000	1,536.000	0.000

Table 4 reports the redundancy index (Q^2), also known as the Stone–Geisser criterion, which is used to evaluate the predictive relevance of the model. According to the table, constructs such as "Transparency and Training" (Q^2 = 0.464), "Competitive Advantages and Development" (Q^2 = 0.431), "Monitoring and Control" (Q^2 = 0.381), and "Information Distortion in Knowledge-Based Companies" (Q^2 = 0.351) demonstrate strong predictive relevance because their Q^2 values exceed 0.35. In addition, the construct "Risk Management and Information Protection" (Q^2 = 0.194) is assessed as having moderate predictive relevance. In contrast, constructs such as "Structural and Legal Weaknesses," "Organizational and Individual Pressures," "Economic and Financial Environment," "Reporting and Auditing System," "Organizational Characteristics," and "Characteristics of Investors and Analysts" show Q^2 values of zero, indicating a lack of predictive relevance for these constructs within the model. Overall, the results suggest that the model performs strongly in predicting certain constructs; however, for others, the model structure may require revision or strengthening.

To accept or reject the research paths, factor loadings and the t-statistics of the constructs are used. The path coefficients between independent and dependent variables can be derived from the factor loadings across the variable paths, and the statistical significance of the relationships between independent and dependent variables can be inferred from the t-statistics.

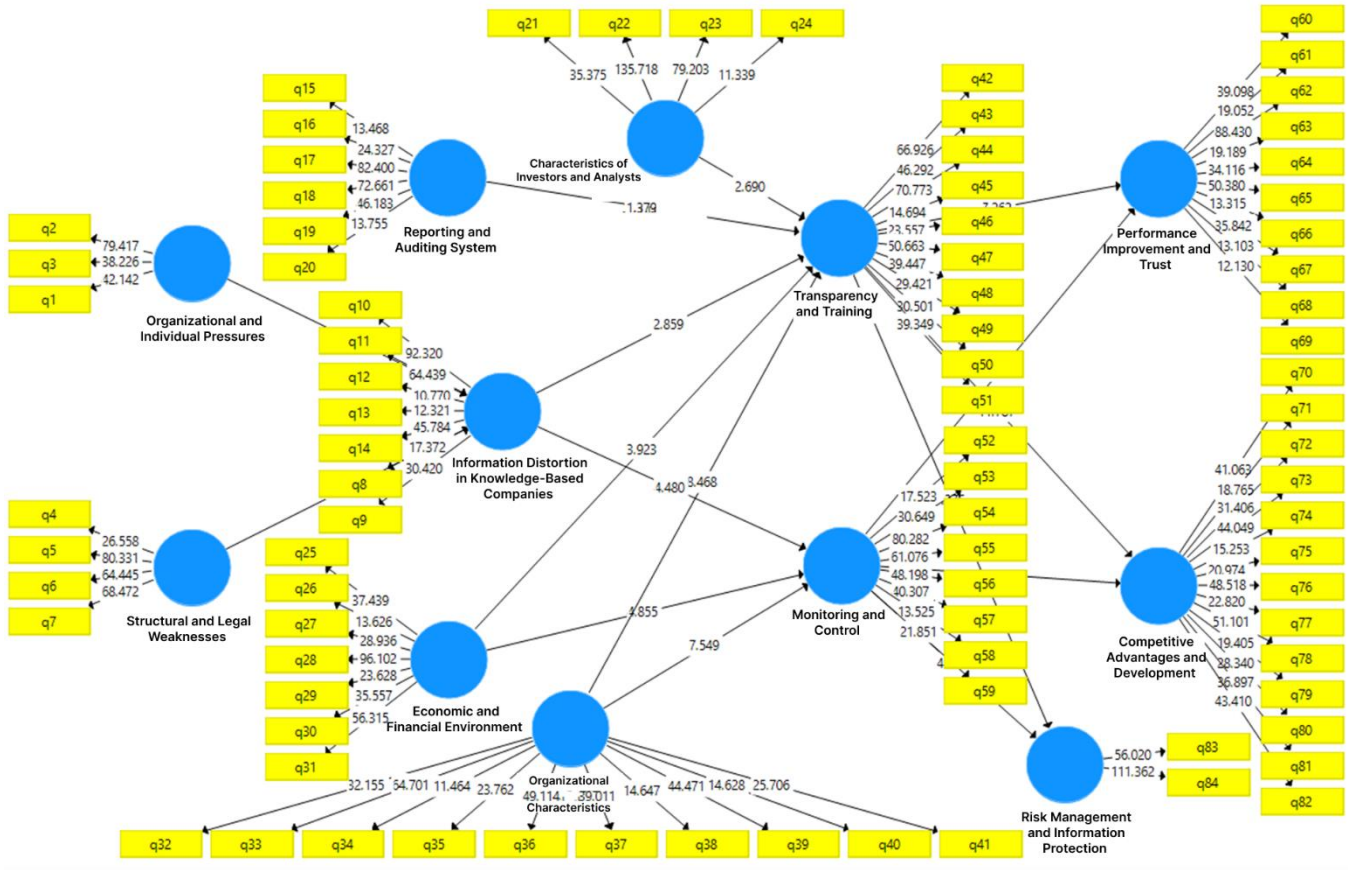

Figure 2. Structural Model in the Significance Estimation State of Coefficients

To examine the research paths, Figures 1 and 2 indicate that all path coefficients are positive, showing that the paths are confirmed at the 95% confidence level. The path coefficient values represent the magnitude of the effect of each factor on the subsequent factor. High t-statistics and low p-values indicate that these effects are statistically significant and that the likelihood of their occurrence by chance is very low. Accordingly, organizational, environmental, and structural strengths and weaknesses directly influence the processes of information distortion, transparency, monitoring, and ultimately performance improvement, trust, and organizational development. These results suggest that managers should first address structural weaknesses, reduce organizational pressures, and pay particular attention to transparency and monitoring in order to improve performance and achieve competitive advantage.

In assessing overall model fit, the measurement and structural models are evaluated jointly, and the overall fit is reported as the Goodness-of-Fit (GOF) index. This index is calculated using the square root of the product of the average R^2 and the communality index (redundancy/communality).

$$GOF = \sqrt{\bar{Communality}} \times \sqrt{\bar{R}^2}$$

$$GOF = \sqrt{0.440} \times \sqrt{0.671} = 0.589 \times 0.823 = 0.485$$

These values indicate the overall fit of the model and can be used as a criterion for evaluating model quality and predictive power. A higher GOF value indicates better overall model fit. Based on the three benchmark values of 0.01, 0.25, and 0.36—representing weak, moderate, and strong GOF, respectively—the obtained GOF value of 0.485 indicates strong overall model fit.

4. Discussion and Conclusion

The findings of the present study provide a comprehensive explanation of how information distortion operates within financing markets and how it shapes investment decision-making in knowledge-based companies. The validated structural model demonstrates that information distortion is not an isolated phenomenon but rather the outcome of a complex interaction among organizational pressures, structural and legal weaknesses, environmental conditions, reporting systems, and investor-related characteristics. This result is consistent with the theoretical foundations of information asymmetry and financial reporting theory, which emphasize that distorted or selectively disclosed information alters investor perceptions of risk and return and, consequently, affects capital allocation decisions [1, 2].

One of the central findings is the strong explanatory and predictive role of information distortion as the core construct influencing downstream outcomes such as transparency, monitoring, performance improvement, trust, and competitive development. This aligns with prior evidence showing that misrepresentation and earnings manipulation directly influence market efficiency and investor behavior [10, 11]. The present study extends this literature by embedding information distortion within a broader causal framework, demonstrating that it mediates the relationship between upstream organizational and environmental factors and downstream investment-related outcomes. In this respect, the results respond to calls for more integrative models that move beyond isolated detection of misstatements toward explaining their strategic and behavioral consequences [35].

The significant effect of organizational and individual pressures on information distortion supports agency-based explanations of opportunistic reporting behavior. When managers face performance targets, financing constraints, or personal incentives, the likelihood of manipulating disclosures increases, particularly in firms with high levels of intangible assets and limited standardized performance metrics. This finding is consistent with empirical studies documenting the role of managerial incentives and ownership structures in shaping earnings management and disclosure practices [30, 31]. In knowledge-based companies, where valuation relies heavily on expectations about future innovation, such pressures appear to be amplified, reinforcing the vulnerability of investors to distorted signals [6, 8].

Structural and legal weaknesses were also found to play a decisive causal role in fostering information distortion. Weak regulatory enforcement, inadequate disclosure standards, and limited legal deterrents reduce the expected costs of misrepresentation, thereby encouraging opportunistic behavior. This result aligns with evidence from emerging markets showing that institutional quality and regulatory effectiveness are critical determinants of disclosure quality and information asymmetry [26, 29]. The findings further corroborate research conducted in the context of the Tehran Stock Exchange, which highlights the importance of robust reporting frameworks and intellectual capital disclosure in reducing informational opacity [27, 28].

Environmental conditions, particularly the economic and financial environment, were identified as important contextual factors shaping the intensity and impact of information distortion. Periods of uncertainty, volatility, or constrained financing increase reliance on narratives and qualitative disclosures, thereby magnifying the influence of distorted information on investment decisions. This observation is consistent with learning-based models of financial markets, which suggest that investors update beliefs under uncertainty using available, and often imperfect, information [3]. It also resonates with real options theory, which emphasizes the role of uncertainty in shaping investment timing and decision-making, although traditional models often abstract from informational manipulation [22, 23].

The study's results regarding the reporting and auditing system as an intervening condition highlight the critical role of disclosure quality and monitoring mechanisms in moderating the effects of information distortion. Strong reporting systems and effective auditing can partially offset the negative consequences of distorted information by improving transparency and credibility. This finding aligns with prior research showing that higher disclosure quality reduces the cost of capital and improves market liquidity by mitigating information asymmetry [2, 26]. It also complements recent work on financial reporting complexity and earnings quality, which emphasizes that clearer and more consistent disclosures enhance investor understanding and trust [38].

Investor and analyst characteristics emerged as another important intervening factor. The results indicate that heterogeneous levels of financial literacy, experience, and cognitive biases among investors influence how distorted information is interpreted and acted upon. This finding strongly aligns with behavioral finance research demonstrating that investors rely on heuristics, peripheral cues, and narratives, particularly in uncertain environments such as crowdfunding and early-stage financing [15, 39]. Linguistic studies further support this interpretation by showing that tone, readability, and deceptive language patterns significantly affect investor judgments, often independently of underlying fundamentals [17-19].

The strong predictive relevance of constructs such as transparency and training, competitive advantages and development, and monitoring and control suggests that mitigating information distortion can generate tangible organizational benefits. Enhanced transparency not only improves investor confidence but also strengthens long-term performance and competitive positioning. This result is consistent with studies linking voluntary disclosure and intellectual capital reporting to reduced financing constraints and improved firm performance [6, 7]. Moreover, it aligns with venture capital research indicating that investors place significant weight on disclosure credibility and managerial signaling when allocating capital to innovative firms [4, 5].

The findings related to signaling and herding dynamics in financing markets further reinforce the importance of information distortion as a strategic tool. While signaling can legitimately reduce information asymmetry, the boundary between credible signaling and misrepresentation is often blurred. Prior studies in reward-based crowdfunding show that discretionary tone and narrative framing can significantly influence funding success, sometimes independent of project quality [16, 20]. The present study complements this literature by demonstrating that such dynamics are not confined to crowdfunding but are also salient in broader financing markets involving knowledge-based companies.

From a methodological perspective, the strong overall model fit and explanatory power for key endogenous constructs suggest that the proposed framework captures the core mechanisms linking information distortion to investment decision-making. By integrating qualitative insights with quantitative validation, the study responds to calls for more holistic approaches to understanding financial misrepresentation and its consequences [36]. The results also extend fraud detection and forensic accounting research by situating detection-related insights within a decision-making and behavioral context [13, 14, 34].

Overall, the discussion indicates that information distortion in financing markets is a multidimensional phenomenon rooted in organizational incentives, institutional environments, reporting practices, and investor behavior. The study advances the literature by offering an integrated, empirically validated model that explains not only where information distortion originates but also how it propagates through the investment decision-making process, particularly in the context of knowledge-based companies.

Despite its contributions, this study has several limitations. First, the empirical analysis is context-specific and focuses on a particular financing environment, which may limit the generalizability of the findings to other

institutional or cultural settings. Second, although a mixed-methods approach was employed, the quantitative data rely on self-reported measures, which may be subject to response bias. Third, the cross-sectional design restricts the ability to make strong causal inferences over time, particularly regarding dynamic changes in information distortion and investor behavior.

Future research could extend this study by applying the proposed model to different countries, industries, or financing mechanisms to assess its external validity. Longitudinal designs would be particularly valuable for examining how information distortion evolves over time and how investors adapt their decision-making strategies in response. In addition, future studies could incorporate objective market data or experimental methods to complement perceptual measures and further strengthen causal interpretations.

From a practical perspective, the findings suggest that managers should prioritize strengthening reporting systems, reducing organizational pressures that incentivize misrepresentation, and investing in transparency and investor education. Regulators and policymakers can use the model to identify critical intervention points for reducing information distortion and protecting investors. Finally, investors and analysts should be aware of the multiple channels through which information distortion operates and adopt more sophisticated analytical approaches when evaluating knowledge-based companies.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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