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Aim and Scope:

The Journal of Emerging Technologies in Accounting (JETA) has started with the aim of expanding the concepts of accounting, auditing and finance in English in order to identify and eliminate gaps in these areas.

The Journal of Emerging Technologies in Accounting (JETA) accepts the articles in the form of Research Article, Review Article, Short Papers, Case-study, Methodologies including these items:

- Emerging technology in the field of Accounting and its future
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- Corporate Governance and the related subjects
- Internal and external auditing and there innovation
- Risk management and its new technologies
- Internal control and new technologies
- Integrated and modern accounting information systems in the organization
- Other research topics related to emerging technologies in accounting

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The Effect of Cost Stickiness on Financial Reporting Quality: The Moderating Role of Financial Constraints

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Abstract

Objectives: This study examines the impact of cost stickiness on financial reporting quality, considering the moderating role of financial constraints. By investigating this relationship, the research aims to highlight how financial constraints can exacerbate the adverse effects of cost stickiness on financial reporting quality.

Methodology/Design/Approach: The study employs a causal-correlational research design. The statistical population consists of firms listed on the Tehran Stock Exchange, from which 131 firms were selected using the systematic elimination sampling method. The study covers the period from 2014 to 2023. Financial reporting quality was measured using the modified Jones model, cost stickiness was assessed based on operating costs, and financial constraints were evaluated using the Kaplan and Zingales model. The research hypotheses were tested using multivariate regression analysis.

Findings: The results indicate that cost stickiness negatively affects financial reporting quality. While financial constraints alone do not significantly impact financial reporting quality, their interaction with cost stickiness intensifies the negative effect. In other words, financial constraints amplify the adverse relationship between cost stickiness and financial reporting quality.

Innovation: This study contributes to the literature by providing empirical evidence on the interplay between cost stickiness, financial constraints, and financial reporting quality in an emerging market context. The findings offer valuable insights for firms seeking to enhance financial reporting transparency by managing cost behavior and financial constraints effectively.

Keywords: Cost Stickiness, Financial Reporting Quality, Financial Constraints.

1. Introduction

Financial reporting is the process of communicating a firm's accounting information to its users. According to the Financial Accounting Standards Board (FASB), financial reporting is not limited to the preparation and presentation of financial statements but also includes the methods of presenting and interpreting information that pertains directly or indirectly to financial data (Colleagues, 2018). Cost stickiness refers to the behavior of costs about changes in the level of activity. It indicates that the magnitude of the increase in costs when activity levels rise is greater than the magnitude of the decrease in costs when activity levels fall. Anderson et al. (2003) first described this phenomenon as "sticky costs" (Namazi et al., 2012).

Firms facing severe financial constraints focus on cash flow when making investment decisions. Although all firms may face financial limitations, the degree of such constraints can vary (Dehdarnasab et al., 2015). The quality of financial reporting is an important issue for investors in the capital market, as it serves as the foundation for their decision-making. When these reports lack quality, investors may make poor decisions, resulting in unmet expectations and lower returns. Several factors can impact the quality of financial reporting, leading to deviations. One such factor is the inconsistency between a firm's income and expenses and the variability of sales and associated costs—referred to as cost stickiness. This phenomenon is often more pronounced in firms with financial constraints. Given these issues, there is a clear research gap in the country, highlighting the need to further investigate the relationship between cost stickiness and financial reporting quality.

Theoretical Foundations and Hypotheses Development

Accounting is a data processing activity that transforms business operations into "business language" in the form of financial statements. These reports are shared with both internal and external stakeholders. The financial reporting process involves the collection and analysis of data from different departments, which are then consolidated into a financial report. The quality of information can be evaluated based on the disclosure content of the financial reports; these statements strongly influence stakeholder decisions, underscoring the need for transparency in financial reporting. Standardized financial reporting has a significant impact on a firm's economic health and serves the role of forecasting and providing foresight, which directly influences operational sustainability. The information in these reports provides interested investors with insights into the risk and uncertainty associated with the firm.

Another key aspect linked to financial reporting is the percentage of a firm's revenue and the behavior of its expenses (Faisal, 2021). Cost stickiness is the asymmetric reflection of economic activity, in which both increases and decreases in sales are reflected differently (Anderson et al., 2003). In simple terms, the increase in costs with rising activity levels is more significant than the reduction in costs when activity levels decline. Anderson et al. (2003) coined the term "sticky costs" to describe this phenomenon. In situations where activity levels change significantly, managers often adjust the firm's cost structure, resulting in changes to the total cost line. Managers are more inclined to adjust costs when activities increase than when they decrease (Balakrishnan et al., 2004).

The quality of financial reporting, as defined by Penman (1996), is based on the current earnings information, which helps predict future profits. Penman believes that investors use previous period profits to forecast future profits, thus aiding their investment decisions. As a result, the financial reports serve as support for purchasing decisions. According to research, the quality of financial reporting is the ability of financial statements to convey relevant information about a firm’s operations, particularly in forecasting expected future cash flows for investors. This aligns with the notion that accruals improve earnings' informational value by reducing the impact of unstable fluctuations in cash flows (Nikbakht et al., 2018). The quality of financial reporting can also be understood as the extent to which financial statements are useful to

investors, creditors, managers, and other stakeholders (Mehravar & Kargar, 2019).

Studies show that when cost stickiness occurs in firms, managers may adjust resources and manipulate events to achieve specific goals. This behavior often leads to revenue management, which compromises the quality of financial information in reports (Poursiadeh et al., 2019). When a firm's costs do not align with its sales and revenue, managers may manipulate financial reports to maintain the firm's image (Faisal, 2021). This leads to the first hypothesis of the study:

H1: Cost stickiness has a significant negative effect on the quality of financial reporting.

In the modern global economy, financial constraints have become a critical issue for firms. However, financial constraints should not be confused with economic pressure or the risk of bankruptcy, although these factors are often related (Lari Dashtbayaz et al., 2018). Firms with financial constraints are more likely to emphasize cash flow when making investment decisions, especially when they face both internal and external financial costs. On the other hand, manipulation of financial statements, fraud, and the resulting degradation of financial reporting quality often occur when managers attempt to mislead shareholders or influence contractual outcomes (Nosrat & Badavar Nahandi, 2018).

Financial constraints refer to situations where firms cannot secure financing for desirable investments due to factors such as poor credit conditions, an inability to obtain loans, or a lack of access to capital markets. While financial constraints can lead to economic pressures, they are distinct from financial pressures or bankruptcy risks. According to Dehdarnasab et al. (2015), firms facing severe financial constraints are more likely to focus on cash flow in their investment decisions. Cost management is essential for daily business operations, and considering cost behavior is a key element in maximizing profits through effective cost management. This behavior creates an asymmetric relationship between changes in business activity and costs, referred to as cost stickiness (Anderson, 2003).

Although cost adjustment is helpful for explaining cost stickiness, firms need sufficient financial resources to offset these costs. Financial constraints that limit access to financing can further exacerbate cost stickiness. Maintaining additional resources is more effective than rebuilding resources after they are depleted, and it aids in quickly resuming production and profits. However, holding onto excess resources ties up liquidity and increases financial risks. Therefore, access to capital plays a critical role in determining cost stickiness, and easing financial constraints can help moderate costs. This insight leads to the second hypothesis:

H2: Financial constraint intensifies the relationship between cost stickiness and the quality of financial reporting.

Research Background

Min Oh (2022), in a study titled *Cost Adhesion and Investment Efficiency*, presented the results of her research, which predicted cost asymmetry as a determinant of investment efficiency and empirically examined it using a sample of 4,328 annual observations from Korean firms during the period 2011-2017. The results indicated that firms with cost stickiness are less efficient in their investments than those without cost stickiness. In other words, cost stickiness is an empirical outcome that supports previous research on cost decision-making from the perspective of managers seeking private interests. By demonstrating that managers' decisions regarding cost behavior impact investment efficiency, this concept provides a foundation for efficient capital management mechanisms.

Tang et al. (2022), in their study *Cost Stickiness and Stock Price Crash Risk*, argued that sticky costs increase the diversity of performance and uncertainty within firms. Investors, considering the expected information and concerns, view fixed costs as indicative of a firm's capacity and risk. The study observed a negative relationship between fixed costs and stock price crash risk. This relationship is particularly evident in firms with younger CEOs, high competition in the

product market, low financial risk, poor performance, and higher, more concentrated government ownership. Overall, the results suggested that cost stickiness reduces the risk of stock price crashes, with implications for corporate governance and strategy.

Ibrahim and Al-Matari (2022), in their study *The Impact of Applied Controls of Governance Laws and Applied Controls Based on Accruals on the Quality of Financial Reporting*, emphasized that governance and its applications significantly influence performance excellence and social development. They found that the application of governance rules—promoting values such as justice, equality, the rule of law, anti-corruption, and transparency—helps improve public budget management and overall performance. A total of 348 questionnaires were distributed, with 242 returned. Structural equation modeling was used to test the hypothetical model, confirming that governance laws and accrual-based controls positively impact financial reporting quality at Jouf University.

Hasibun and Abdul Nasser (2022), in their study *The Role of Firm Characteristics in Financial Reporting Quality*, explored how firm characteristics shape the quality of financial reporting in Indonesia. Using structural equation modeling, the study found that structural, regulatory, and performance characteristics have a positive and significant impact on financial reporting quality. However, performance characteristics alone did not significantly affect reporting quality. The findings suggest that focusing on oversight, structure, and performance can enhance the quality of financial reporting, especially in the current pandemic environment.

Faisal (2021), in a study titled *Analysis of the Effect of Cost Stickiness on the Quality of Financial Reporting*, used data from manufacturing firms in Indonesia for 2018. The study employed documentary methods for data collection, analyzed using statistical and regression tests. The results showed that raw material cost stickiness significantly affects the level of financial disclosure, while stickiness in administrative, sales, and labor costs had no significant effect on disclosure in the production sector.

Li and Lu (2021), in *Product Market Competition and Cost Stickiness: Evidence from China*, found that product market competition reduces cost stickiness in emerging markets. For firms with a differentiation strategy, the impact of product market competition on cost stickiness remains unaffected. For firms with public property rights, however, this effect is significantly weakened. Additionally, financial strength and competitive industry position further diminish the impact of product market competition on cost stickiness.

Chen and Ma (2021), in their study *Financial Constraint, Internal Control, and Cost Stickiness*, indicated that managers believe resource retention is more effective than restructuring resources later. However, financial constraints introduce uncertainty in resource decisions. Their results revealed that financial constraints significantly affect cost stickiness, and low internal control quality exacerbates the relationship between financial constraints and cost stickiness.

Habib and Costa (2021) examined the relationship between debt maturity structure and cost stickiness, finding that despite a decrease in activity, managers continue to expand resources for personal gain. They found that short-term debt limits this opportunistic behavior and limits cost stickiness. The availability of free cash flow, revenue management incentives, and executive compensation structures also influence cost stickiness.

Li et al. (2020), in *Risk Management and Cost Asymmetry: Evidence from China*, demonstrated that managers' risk preferences significantly influence cost management decisions. The study concluded that cost stickiness increases with managers' risk appetite, especially in less competitive industries and regions with lower marketing intensity. The findings suggest that managerial characteristics play a key role in asymmetric cost behavior.

Almatari et al. (2020), in *The Impact of Corporate Governance Mechanisms on the Quality of Financial Reporting*, studied the effects of corporate governance mechanisms under Indian accounting standards using a sample of 97 firms listed on the Bombay Stock

Exchange. The study found that the characteristics of the board of directors and audit committee (except for the audit committee's accuracy) significantly influence financial reporting quality. Foreign ownership did not contribute to reporting quality, but audit quality had a substantial impact.

Dine et al. (2015), in *Weaknesses in Internal Control and Financial Reporting Quality*, explored whether weak internal controls increase the financial risk of fraudulent reporting by managers. Their study highlighted a strong relationship between material weaknesses in controls and future fraud disclosures, suggesting that weak controls provide opportunities for financial manipulation, reducing the quality of financial reporting.

Farnoudi and Qajarbeigi (2021), in their study on financial distress and financial constraints, found that financial distress significantly affects accounts payable and receivable. However, financial constraints only impacted accounts receivable, with no strong evidence that they influenced accounts payable.

Razmanesh and Soori (2021), in *Financial Reporting Quality and Investment Efficiency*, investigated the role of family ownership in investment efficiency. The study concluded that high-quality financial reporting improves investment efficiency by reducing information asymmetry. Family ownership was found to positively moderate the relationship between financial reporting quality and investment efficiency.

Fattahi et al. (2020), in *Cost Stickiness and Credit Risk of Banks*, found a significant positive relationship between cost stickiness and credit risk, suggesting that increased cost stickiness leads to lower asset quality, greater profit instability, and higher credit risk in banks.

Vaghfi et al. (2019), in *a Study of Cost Stickiness Behavior in Tehran Stock Exchange Firms*, observed that the intensity of cost increases is greater than the intensity of cost decreases for the same change in activity levels, indicating cost stickiness behavior in the studied firms.

Pourshyadeh et al. (2019), in *The Effect of Ownership Concentration on the Relationship between Cost and Risk Stickiness*, found that cost stickiness significantly increases firm risk. Ownership concentration, as a key component of corporate governance, negatively moderates the relationship between cost stickiness and firm risk.

Hajiha et al. (2019), in *The Effect of Managers' Short-Term Attitude on Cost Stickiness*, found that managers' short-term attitudes negatively correlate with cost stickiness, suggesting that earnings management and cost control motivations are influenced by managers' short-term focus.

Bazrafshan et al. (2018), in *The Effect of Managers' Narcissism on the Quality of Financial Reporting*, found no significant relationship between narcissistic traits based on signature size and financial reporting quality. However, a significant relationship was observed between managers' reward ratios and financial reporting quality.

Nikbakht and Khanbeigi (2018), in *The Impact of Corporate Governance on the Quality of Financial Reporting*, concluded that corporate governance positively influences the quality of financial reporting in the Iranian capital market. Their findings suggest that strong governance, particularly in terms of audit and ownership structure, significantly affects reporting quality.

Nosrat and Badavar Nahandi (2018), in *The Relationship between Corporate Governance and Firm Growth*, found that institutional ownership and ownership concentration positively relate to firm growth, while financial constraints do not significantly affect this relationship.

Namazi and Fathali (2018), in *Investigating the Effect of Intellectual Capital and Free Cash Flow on Cost Stickiness in Tehran Stock Exchange Firms*, revealed that there is a significant anti-sticky relationship between free cash flow and costs. The study further indicated that intellectual capital and free cash flow reduce cost stickiness in firms with higher intellectual capital.

Research Methodology

This research is applied in nature, aiming to address practical issues, and follows a causal and post-event correlation design as it investigates relationships after the occurrence of an event. The study focuses on firms listed on the Tehran Stock Exchange, with a research period spanning from 2014 to 2023.

The statistical population includes all firms listed on the Tehran Stock Exchange. To ensure comparability and consistency in the study, certain criteria were applied during the selection process of the final sample:

Financial Year Consistency: The firms in the sample must have a financial year ending in March and have not altered their fiscal year during the study period (2014-2023).

Data Availability: The selected firms must have disclosed all the required information during the study period and must not be involved in significant events (e.g., bankruptcy, mergers) that could invalidate the research results.

After applying these criteria, 131 firms were chosen as the final sample.

For the data analysis, a panel data approach was used, which enables the study of multiple entities over time. This methodology provides more comprehensive and reliable information. The analysis was conducted using **Eviews 12 software**, with the application of the **robust standard error method** to address potential heteroscedasticity issues and ensure the reliability of the hypothesis testing.

The research utilizes **regression analysis** to explore the relationships between various factors, as regression is the most suitable method for examining causal relationships and testing hypotheses in the current study.

Table 1: How to Choose a Statistical Sample of Research

The statistical population in 2023		536
Lack of Corporate Responsibility	-189	
Firms withstock trading freezes	-31	
Firms that have changed the course of finance	-50	
Firms that entered the stock market during the research period	-92	
Investment Firms, Bank, and Holdings	-49	
Final Sample of Research		135

Operational Definitions of Research Variables

Dependent Variable: Financial Reporting Quality (FRQ)

In this study, accrual quality is used as a proxy for financial reporting quality. The modified Jones model (1995), recognized as one of the most robust models for measuring accrual quality, is employed. The model is formulated as follows:

$$\frac{\mathrm{TAC}_{\mathrm{it}}}{\mathrm{TA}_{\mathrm{it-1}}} = \alpha_0\left(\frac{1}{\mathrm{TA}_{\mathrm{it-1}}}\right) + \alpha_1\left(\frac{\Delta REV_{it}}{TA_{it-1}}\right) - \alpha_2\left(\frac{\Delta REC_{it}}{TA_{it-1}}\right) + \alpha_3\left(\frac{PPE_{it}}{TA_{it-1}}\right) + \varepsilon_{\mathrm{it}}$$

Where:

$TAC_{i,t}$: Total accruals of firm *i* in year *t* (calculated as net profit minus operating cash flow for the current period):

TACi,t= Ei,t – OCFi,t

$E_{i,t}$: Net profit of firm *i* in year *t*

$OCF_{i,t}$: Operating cash flow of firm *i* in year *t*

$\Delta REV_{i,t}$: Change in sales revenue of firm *i* between years *t* and *t-1*

$\Delta REC_{i,t}$: Change in accounts receivable of firm *i* between years *t* and *t-1*

$PPE_{i,t}$: Gross property, plant, and equipment of firm *i* in year *t*

$TA_{i,t-1}$: Total book value of assets of firm *i* in year *t-1*

$\varepsilon_{i,t}$: Residual term of the model

To determine the quality of accruals in this study, the absolute value of the model's residuals (ϵ_{it}) is taken and multiplied by -1. This transformation ensures that higher absolute residuals, which indicate greater discretionary accruals and lower financial reporting quality, yield negative values, aligning with the interpretation that lower values represent higher accrual quality.

Research Independent Variable: Cost Adhesion (CS)

The concept of cost stickiness was first introduced by Anderson et al. (2003). Cost stickiness is a type of cost behavior that reflects how costs respond asymmetrically to revenue fluctuations—rising more when revenue increases but declining at a slower rate when revenue decreases.

To measure cost stickiness, Anderson et al. (2003) employed a virtual regression model, which has been further utilized and refined by Kurdistani (2020). Additionally, Reimer (2018) and Hamburg (2018) proposed similar models to quantify cost stickiness. The following model is commonly used in the literature, with the residual term indicating the degree of cost stickiness:

$$log\left(\frac{\text{SGAt}}{\text{SGAt}-1}\right) = \beta_0 + \beta_1\, log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + \beta_2\, Dt * log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + e$$

This model helps in assessing how firms adjust their costs in response to revenue changes, providing insights into managerial decision-making and financial flexibility.

In this context, the variables used in the regression model for measuring cost stickiness are defined as follows:

SGA_t: Selling, General, and Administrative (SG&A) expenses in the current year (operating costs).

SGA_{t-1}: Selling, General, and Administrative (SG&A) expenses in the previous year.

$Sales_t$: Total sales revenue in the current year.

$Sales_{t-1}$: Total sales revenue in the previous year.

D_t: A dummy variable that takes the value of **1** when the sales revenue of the current year has decreased compared to the previous year (indicating periods of declining sales) and **0** otherwise.

This model allows researchers to examine how firms adjust their operating costs in response to changes in sales revenue, highlighting the asymmetric nature of cost behavior.

Moderating Variable: Financial Constraint (KZ)

Firms are considered financially constrained when there is a gap between the internal and external sources of allocated funds. Based on this definition, all firms experience financial constraints to some extent; however, the severity of these constraints varies. Firms with lower financial constraints typically possess higher liquidity and substantial net assets.

In this study, financial constraint is treated as a binary variable (0 and 1). To measure financial constraints, the **Kaplan and Zingales (KZ) index** is used, which has been localized for the Iranian business environment by **Raei and Hesarzadeh (2009)**. The KZ scores are ranked from the smallest to the largest and then divided into five quantiles. Firms in the **fourth and fifth quantiles** are classified as financially constrained firms.

KZ = 17.33 – 37.486 * (Cashholding/ Total Assets) – 15.21 * (DIY/ Total Assets) + 3.39 * LEV – 1.402 * (M/B)

Cashholding: Net cash flow of the firm divided by total assets.

Total Assets: The total value of a firm's assets.

Dividend-to-Assets Ratio (DIY): The ratio of total dividends paid to total assets.

LEV (Leverage): Total liabilities of the firm divided by total assets.

M/B (Market-to-Book Ratio): The ratio of the market value of equity to its book value (Nosrat & Badavarnahdi, 2018).

Research Control Variables

- **ROA (Return on Assets):** This variable is calculated by dividing net profit before interest and tax by total assets.
- **SIZE (Firm Size):** This variable is measured as the natural logarithm of total assets.
- **LEV (Leverage):** This variable is computed as the ratio of total liabilities to total assets.
- **MTB (Market-to-Book Ratio):** This variable is calculated by dividing the market value of equity by the book value of equity at the end of the financial year.
- **STATE (State Ownership):** This is a binary variable, where a value of **1** is assigned if the firm's largest shareholder (i.e., the entity or individual holding the highest percentage of shares) is the government or a government-affiliated entity; otherwise, it is assigned a value of **0**.

Research Regression Model

$$FRQ_{i,t} = \beta\ \beta 0_1\ CS_{i,t} + \beta 2\ KZ_{i,t} + \beta 3\ (CS_{i,t} \times KZ_{i,t}) + \beta 4 LEV_{i,t} + \beta 5\ SIZE_{i,t} + \beta 6\ ROA_{i,t} + \beta 7\ MTB_{i,t} + \beta 8 STATE_{i,t} + \varepsilon_{it}$$

Descriptive findings

The primary central index is the **mean**, which represents the equilibrium point and the center of gravity of the distribution. It serves as a reliable indicator of data centrality. For instance, the **average leverage value** is **0.55**, indicating that approximately half of the observations fall below this value while the other half exceed it.

In general, **dispersion parameters** measure the spread of data points relative to each other or the mean. One of the most significant dispersion parameters is the **standard deviation**, which quantifies variability. In this study, the **standard deviation** for **firm growth (market capitalization to book value)** is **5.37**, while for **cost stickiness**, it is **0.09**. These values indicate that firm growth exhibits the highest variation, whereas cost stickiness shows the lowest standard deviation.

The results in **Table 4** indicate that the significance level of the **White test** in the research model is below 5%, suggesting the presence of heteroscedasticity in the error terms. This issue was addressed in the final model estimations by employing the **Generalized The Least Squares (GLS)** method. Additionally, the results from the **Godfrey-Brochure test** for serial autocorrelation show that the significance level of the autocorrelation test in the research models is below 5%, implying the absence of serial correlation in the models. Furthermore, the **Durbin-Watson statistic** confirms that there is no substantial autocorrelation among the residuals of the model.

According to the results presented in **Table 5**, the significance level of the variables in the reliability test is below 5%, indicating that the variables are stationary.

According to the results presented in **Table 6**, the significance level of the test for the research model is below 5%, indicating the acceptance of the pooled data model.

Table (2): Descriptive statistics of research variables

Variable	Mean	Max	Min	ST.D
FRQ	0.12-	0.004-	0.61-	0.12
CS	0.007	0.30	0.17-	0.099
Kz	0.40	1.00	0.0000	0.49
LEV	0.55	0.96	0.10	0.20
MTB	6.26	16.9	1.02	5.37
ROA	0.14	0.55	0.075-	0.14
SIZE	14.65	19.53	11.64	1.48
STATE	0.41	1.00	0.0000	0.49

Table (4): Results of Variance and Serial Autocorrelation Test

Test Model	Test Statistics	Sig
White Test	237.1	0.0000
The Brush Godfrey Test	0.99	0.60
Comprehensive Research Model (Watson Durbin)	1.97	-

Table 5: Stability Test Quantity of Variables

Variable	Test Statistics	Sig	Results
FRQ	23.6070-	0.0000	Stationary
CS	8.68722-	0.0000	Stationary
LEV	11.2303-	0.0000	Stationary
MTB	19.6820-	0.0000	Stationary
ROA	13.3262-	0.0000	Stationary
SIZE	16.8838-	0.0000	Stationary

Table (6): F-Limmer (Chow) Test Results

Test Model	Test Statistics	Sig
Research Model	0.70	0.66

Table (7): Results of Testing Research Hypotheses

$FRQ_{i,t} = \beta\,\beta 0_1\, CS_{i,t} + \beta 2\, KZ_{i,t} + \beta 3\, (CS_{i,t} \times KZ_{i,t}) + \beta 4 LEV_{i,t} + \beta 5\, SIZE_{i,t} + \beta 6\, ROA_{i,t} + \beta 7\, MTB_{i,t} + \beta 8 STATE_{i,t} + \varepsilon_{it}$

Variables	Coef	ST.D	Statistic t	Sig	VIF
CS	0.66-	0.079	8.33-	0.0000	1.56
Kz	0.007	0.013	0.54	0.58	1.75
CS*KZ	0.73-	0.081	8.94-	0.0000	1.54
LEV	0.020-	0.018	1.11-	0.26	1.65
SIZE	0.0001	0.002	0.076	0.93	1.10
ROA	0.13-	0.029	4.62-	0.0000	1.92
MTB	0.002-	0.0006	3.48-	0.0005	1.61
STATE	0.006	0.006	1.11	0.26	
C	0.061-	0.032	1.87-	0.061	-
R2	0.12				
D.W	1.97				
F	18.45319				
-	0.0000				

The results in **Table 7** show that the cost stickiness variable, with a negative coefficient (-0.66) and a significance level of less than 5% (0.0000), has a significant inverse relationship with the quality of financial reporting. Therefore, the first hypothesis of the research is accepted at the 5% error level. This indicates that as cost stickiness increases, the quality of financial reporting decreases.

For the second hypothesis, the interaction of cost stickiness and financial constraint, with a negative coefficient (-0.73) and a significance level of less than 5% (0.0000), demonstrates an inverse effect on the quality of financial reporting. Since the absolute value of the regression coefficient for the second hypothesis is larger than that of the first hypothesis, it can be concluded that financial constraint intensifies the negative relationship between cost stickiness and the quality of financial reporting. As a result, the second hypothesis is also accepted at the 5% error level.

Regarding the control variables, firm growth and return on assets both show a significant relationship with the dependent variable at a level of less than 5%. The coefficient of determination is 12%, indicating that the independent and control variables in the model explain 12% of the variance in the dependent variable. Additionally, the value of the Durbin-Watson statistic is 1.97, which suggests that there is no strong serial correlation in the residuals of the model.

Discussion & Conclusion

The main objective of this study is to examine the effect of cost stickiness on the quality of financial reporting, considering the role of financial constraints. The estimated coefficient of the cost stickiness variable, which is negative, along with a calculated t-statistic value below 5%, indicates that the relationship between these variables is inverse and statistically significant at the 95% confidence level.

Financial reporting quality serves as a criterion that differentiates useful information from irrelevant data, enhancing the overall usefulness of financial information. It refers to the extent to which financial statements provide valuable insights for investors, creditors, managers, and other stakeholders. More precisely, financial reporting quality is defined by the accuracy of financial reports in reflecting relevant information about a firm's operations and cash flows.

Prior research suggests that cost stickiness arises when managers deliberately adjust resources and manipulate events to achieve specific corporate objectives. This practice, often classified as earnings management, compromises the reliability of financial reports. When firm costs do not align with sales and revenue levels, managers may seek to preserve the firm's financial image, leading to distortions in financial reporting. Consequently, an increase in cost stickiness results in a decline in financial reporting quality. The findings of this study's first hypothesis align with the research of Faisal et al. (2021), who also concluded that cost stickiness is associated with lower financial reporting quality.

Furthermore, the estimated coefficient for the interaction between financial constraint and cost stickiness—represented statistically as a multiplicative term—demonstrates a negative value, with a t-statistic below 5%. This result indicates that the relationship between these variables is also inverse and significant at the 95% confidence level. The interaction between financial constraints and cost stickiness further diminishes financial reporting quality.

Cost management is a critical aspect of corporate decision-making, playing a key role in resource allocation and profit maximization. While cost adjustments help explain cost stickiness, firms still require adequate financial support to manage these costs effectively. The financial burden associated with securing external funding often leads to financing constraints, which, in turn, exacerbate cost stickiness.

Preserving resources is generally more efficient than rebuilding them once depleted, as it allows firms to resume production and profitability more swiftly. However, maintaining surplus resources ties up liquidity and increases financial risk, making access to capital a crucial determinant of cost stickiness. When a firm faces cost stickiness, it must secure financing to cover these expenditures. In cases where firms

experience financial constraints, the simultaneous presence of both factors—cost stickiness and financial constraints—can pressure managers to misrepresent the firm's financial condition in financial reports. Consequently, financial reporting quality is further compromised.

The findings of the second hypothesis are consistent with the research of Chen and Ma (2021), who concluded that financial constraints exacerbate cost stickiness.

Practical Research Suggestions

Continuous cost control and alignment with the firm's revenue level are fundamental responsibilities of managers. Since the financial foundation of any business depends on maintaining a balance between income and expenses, managers must implement strategic plans for the sale and procurement of raw materials. By considering market conditions, risks, inflation, and economic downturns, firms can prevent cost stickiness and maintain financial stability.

- **Financial preparedness:** Managers must ensure adequate resources are available to address potential shortfalls in financing. Maintaining a balanced approach to liquidity and investments prevents situations where financial constraints force them to manipulate financial reports.
- **Impact on stock price:** If poor financial reporting quality stems from cost and financing crises and persists undetected, its eventual disclosure could negatively impact investor behavior. A sudden revelation of low-quality financial reports may lead to a sharp decline in the firm's stock price.
- **Investor confidence:** By assessing the financial strength of firms and ensuring the accuracy of financial reports, shareholders can make informed decisions about potential returns and risks, leading to more confident investment choices.
- **Specialized financial management:** Firms should establish dedicated economic teams and appoint managers with expertise in financial issues, reducing the need for earnings management practices that compromise financial reporting quality.
- **Role of capital market analysts:** Analysts play a crucial role in safeguarding market integrity by conducting thorough evaluations of firms' financial statements and capabilities. Their insights help firms, investors, and the broader capital market make well-informed decisions.

References

Almaqtari, F. A., Hashed, A. A., Shamim, M., & Al-and, W. M. (2020). Impact of corporate governance mechanisms on financial reporting quality: A study of Indian GAAP and Indian Account Standards. *Problems and Perspectives in Management, 18(4)*, 1–13.

Anderson, M., Banker, R., & Janakiraman, S. (2003). Are selling, general, and administrative costs sticky? *Journal of Accounting Research, 41(1)*, 47–63.

Balakrishnan, R., Petersen, M. J., & Soderstrom, N. S. (2004). Does capacity utilization affect the "stickiness" of cost? *Journal of Accounting, Auditing and Finance, 19(3)*, 283–299.

Bazrafshan, V., Bazrafshan, A., & Salehi, M. (2018). The effect of managers' narcissism on the quality of financial reporting. *Quarterly Journal of Accounting and Auditing Reviews, 25(4)*, 457–478.

Chen, X., Cheng, Q., & Wang, X. (2015). Does increasing board independence reduce earnings management? Evidence from recent regulatory reforms. *Review of Accounting Studies, 20(2)*, 899–933.

Chen, Y., & Ma, Y. (2021). Financing constraints, cost stickiness, and internal control quality. *Joe's Economics and Management, 22(5)*, 1231–1251. https://doi.org/10.3846/jbem.2021.14878

Dehdarnasab, P., Hamzelou, H., & Rahmani, M. (2015). Investigating the scope of earnings management appeal of financially restricted and

non-financially restricted firms in firms listed in Tehran Stock Exchange. *International Conference on Modern Research in Management, Economics and Accounting, 2*, 1–16.

Donelson, D. C., Ege, M., & McInnis, J. M. (2017). Internal control weaknesses and financial reporting fraud. *Problems and Perspectives in Management, 28(3)*, 1–17.

Enayatpour Shiadeh, E., Derakhshan, J., & Forghani, A. (2019). The effect of ownership concentration on the relationship between cost stickiness and investment of fixed assets in Tehran Stock Exchange. *Research in Accounting and Economics, 4(1)*, 49–60.

Fatahi, Y., Kordestani, G., & Rastgooyan, H. (2020). Cost stickiness and credit risk of banks. *Quarterly Journal of Islamic Economics and Banking, 31*, 99–115.

Farnoudi, I., & Ghajarbeigi, M. (2021). Investigating the effect of financial distress and financial constraints on the business credit of Tehran Stock Exchange firms. *New Research Approaches in Management and Accounting, 9(70)*, 111–129.

Habib, A. M. D., & Costa, M. D. (2021). Debt maturity structure and cost stickiness. *Journal of Corporate Accounting & Finance, 2021*. https://doi.org/10.1002/jcaf.22479

Hajiha, Z., Ghaderi, K., & Ghaderi, S. (2019). The effect of managers' short-run attitude on cost stickiness of firms listed in Tehran Stock Exchange. *Asset Management and Financing, 26*, 27–44.

Hasibuan, A. N. (2022). The role of firm characteristics in the quality of financial reporting in Indonesian. *Jurnal Ilmiah Peuradeun, 10(1)*, 1–12.

Ibrahim, T. K. T., & Al-Matari, E. M. (2022). The effect of governance rules application controls and the accrual basis application controls on quality of financial reporting: Applying to Jouf University. *Sustainability, 14(5)*, 2831. https://doi.org/10.3390/su14052831

Kayhan, E. N. (2021). Financial frauds and government's role. *Law Business Research*. https://www.gurkaynak.av.tr/docs/c1677-turkey.pdf

Kordestani, G., & Mortazavi, S. M. (2012). Investigating the effect of managers' considered decisions on cost stickiness. *Accounting and Auditing Reviews, 19(67)*, 73–90.

Lari Dashtbayaz, M., Salehi, M., & Sakhavatpour, M. (2018). Investigating the relationship between financial constraints and asset structure and financing in the Tehran Stock Exchange. *Asset Management and Financing, 6(1)*, 181–196.

Li, H. (2015). Managerial ability and internal control quality: Evidence from China. *International Journal of Financial Research, 6(2)*, 54–66.

Li, J., & Luo, Z. (2021). Product market competition and cost stickiness: Evidence from China. *Managerial and Decision Economics, 3(4)*, 305–360.

Mehravar, M., & Kargar, H. (2019). The moderating effect of social responsibility and financial reporting quality on the relationship between earnings information content and internal control weakness. *1st National Conference on Humanities, Payame Noor University of Shiraz.*

Namazi, M., & Fathali, A. (2018). Investigating the effect of intellectual capital and free cash flow on cost stickiness in Tehran Stock Exchange firms. *Empirical Research in Accounting, Winter*, 223–250.

Namazi, M., Ghaffari, M. J., & Fereydouni, M. (n.d.). Fundamental analysis of sticky behavior of costs and cost on the range of changes in Tehran Stock Exchange. *Advances in Accounting, 4(2)*, 151–177.

Natakusumawati, F. T. (2021). Analysis of the relationship between cost stickiness and financial reporting quality in the Indonesian Stock Exchange (Study in manufacturing sector

firms in 2018). *Diponegoro Journal of Accounting, 10(1)*, 1–9.

Nikbakht, M. R., & Ahmad Khan Beigi, M. (2018). The impact of corporate governance on the quality of financial reporting: An integrated approach. *Quarterly Journal of Accounting and Auditing Review, 52(8)*, 422–488.

Nikbakht, M., & Deldar, M. (n.d.). Investigating the behavior of cost stickiness and its effect on audit quality. *Financial Accounting Research, 8(3)*, 77–100.

Nosrat, G., & Badavar Nahandi, Y. (2018). The relationship between corporate governance and firm growth with an emphasis on the role of financial constraints. *Journal of Development and Evolution Management, 33*, 25–35.

Oh, H. M. (2022). Cost stickiness and investment efficiency. *Journal of Industrial Distribution & Business, 13(1)*, 11–21.

Razmanesh, F., & Souri, A. (2021). Financial reporting quality and investment efficiency: The moderating role of family ownership. *Accounting and Management Perspective, 53*, 31–47.

Tang, Y., Huang, L., Liu, J., & Wan, X. (2022). Cost stickiness and stock price crash risk: Evidence from China. *Emerging Markets Finance and Trade, 58(2)*, 544–569. https://doi.org/10.1080/1540496X.2020.178718

Vaghfi, S. H., Pardin, K., & Khajehzadeh, S. (2019). A study of cost stickiness behavior in Tehran Stock Exchange firms. *Accounting, Accountability, and Community Interests, 35*, 135–155.

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Modern Business Model Based on Cloud Computing

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Abstract

Objectives: The rapid expansion of new information technologies in business, particularly those integrated with cloud computing, has transformed traditional information and communication technology methods, reshaping existing business models and creating a global market for cloud-based products and services. This study aims to develop an innovative business model based on cloud technology.

Methodology/Design/Approach: The research employs a mixed qualitative-quantitative approach. In the qualitative phase, the study systematically identified, evaluated and analyzed domestic and international research on cloud computing-based business in the financial sector using the seven-stage model of Sandelowski and Barso (2007). The analysis covered studies from 2010 to 2023 with 40 articles selected based on the CASP scale. The identified factors and criteria were then reviewed and validated by 12 experts. In the quantitative phase, the Shannon entropy method was applied to rank the factors influencing cloud computing-based businesses, as identified in the reviewed literature.

Findings: The meta-synthesis results indicate that the conceptual model of cloud computing-based businesses comprises five main factors: (1) dynamic capabilities, (2) sensing, (3) interviewees, (4) conversion, and (5) confiscation, along with 30 associated criteria. The identified factors were further ranked using the Shannon entropy technique, and a qualitative model was proposed.

Innovation: This study contributes to the understanding of the evolution of dynamic capabilities, cloud sourcing, and cloud-based business model innovation. The proposed model offers valuable insights for businesses seeking to leverage cloud computing to enhance competitiveness and adaptability in the financial sector.

Keywords: New Business Model, Cloud Computing, Stage-Based Model, Dynamic Capabilities Theory.

1. Introduction

In today's rapidly evolving competitive landscape, business success—regardless of industry, size, or scale—relies on strategic initiatives, persistent efforts, and sacrifices. However, without innovation, new ideas, and the adoption of emerging technologies, sustaining success and ensuring long-term survival remains a challenge. One of the fundamental drivers of business opportunity creation is leveraging innovative capabilities to develop and implement technologies such as cloud computing. This technology facilitates a new approach to IT system sourcing and drives transformational processes through an organization's dynamic capabilities (Bonken et al., 2019).

Cloud computing is a revolutionary method that operates on computer networks, including the Internet. It fosters innovation while simultaneously strengthening a company's competitive advantage. As highlighted by Schneider and Sunyaev (2016), cloud computing provides an alternative model for supplying, consuming, and delivering computing services—encompassing infrastructure, software, and platforms—through network-based systems. Within this framework, cloud computing and cloud sourcing streamline IT outsourcing and, more importantly, enhance strategic elements and innovation capabilities to reinforce businesses' competitive positions (Muhic & Johansson, 2014).

Research indicates that cloud computing, as one of the most widely adopted technologies in the modern era, has drawn significant attention from scholars and industry professionals, with adoption rates increasing rapidly (Sabetrasekh et al., 2023). Organizations are investigating how to utilize cloud computing to minimize fixed IT costs and capitalize on its flexibility. According to market research, cloud computing is a disruptive technological trend that is reshaping traditional procurement methods and revolutionizing IT service delivery (Forrester, 2012; Gartner, 2012). Industry perspectives suggest that cloud computing has the potential to fundamentally alter competitive dynamics by offering a novel platform for innovation and value creation in business and manufacturing (Lu et al., 2011). Moreover, cloud computing supports business innovation by enabling companies to conduct business activities in a low-risk, agile test environment (Gastermann, 2015). Consequently, the potential of cloud computing as a transformative and innovative business technology continues to receive increasing recognition (Krishnan, 2009; Holt et al., 2011).

As Giesen et al. (2010) noted, companies continually seek business model innovation to enhance flexibility and cost efficiency through strategic partnerships and outsourcing. Lindegaard et al. (2009) define business model innovation as a creative process that involves applying two or more business model components in novel ways to generate value. Steenkamp and Walt (2004), however, argue that business model innovation should not be limited to modifying a few elements but should encompass changes across all business model components. Chesbrough and Rosenbloom (2003) emphasize that technological innovation is crucial for economic value creation, asserting that business model innovation is instrumental in capturing, assimilating, and capitalizing on technological advancements (Gabriel, 2006).

Organizations that lack dynamic capabilities may struggle to harness the full potential of cloud computing, as well as other emerging technologies such as artificial intelligence and the Internet of Things. These limitations can hinder efforts to transform business models and improve competitive advantage. However, organizations that effectively recognize and exploit cloud computing opportunities may also need to reevaluate their structures, cultures, and business models to maintain their competitive edge (Bouncken et al., 2019).

Recent research on strategic competitive advantage extends beyond traditional innovation studies, focusing on business process differentiation through technological advancements and value creation via business model innovation (Chesbrough, 2006; Prahalad & Krishnan, 2008; Bloomberg et al., 2008; Johnson et al., 2008; Zoot et al., 2010; Na, 2012; Rader, 2012). Despite concerns about the challenges associated with cloud computing adoption in business environments (Al-Raqayan, 2017; Hu et al., 2017; Poti, 2013), many companies—including startups—actively seek ways to leverage cloud delivery models, ease of use, and standardized infrastructures to enhance business model productivity and competitiveness (Venteerz & Vidle, 2012).

Business innovation models examined in recent research predominantly center on technological advancements and reconfiguring key business model components (Foss & Saebi, 2017). However, outsourcing IT resources to the cloud—specifically the

transition from traditional IT outsourcing to cloud sourcing—poses challenges for businesses, particularly larger enterprises. This is due to the complexities of achieving cloud computing's core benefits, such as on-demand resource management and pay-per-use cost structures (Michelle et al., 2016).

Prior studies, which primarily focus on technical aspects (Schneider & Sunyaev, 2016) or cloud computing user demographics (Rotten, 2016), indicate that factors such as individual mindset, behavioral characteristics, and managerial support influence continued cloud sourcing adoption (Rotten, 2016). Findings also suggest that many companies with traditional IT frameworks lack the capabilities needed to create innovative business models and gain competitive advantages (Wilcox et al., 2013). While traditional companies typically engage in direct customer-vendor relationships (Vithayathil, 2018), cloud-sourcing firms operate within a complex ecosystem involving multiple stakeholders, including cloud brokers, providers, sub-providers, and IT consultants. Successfully managing these relationships requires specialized competencies (Willcocks et al., 2013).

Existing studies provide a limited understanding of how cloud computing adoption and sustained cloud sourcing contribute to business model innovation and competitive advantage (Soleymanian et al., 2022). Furthermore, despite extensive research on business models, the absence of a unified framework applicable across various organizations and economic conditions has hindered the development of a comprehensive definition (Samarghandi et al., 2023). Integrating technology-driven approaches into business models further complicates this issue (Pigneur et al., 2010). Consequently, the literature provides minimal insights into cloud computing's role in fostering innovative business models.

This study aims to explore cloud computing, the stages of business model innovation, and the theory of dynamic capabilities to understand their implications for knowledge-based business models. It also seeks to introduce an innovative business model based on cloud computing for the first time in Iran. Accordingly, this research envisions businesses as dynamic entities comprising semi-permanent managerial capabilities, aiming to bridge gaps in business model innovation by addressing organizational weaknesses in dynamic capabilities. Additionally, it examines the necessity and mechanisms of cloud computing adoption in business model innovation from a knowledge-based perspective. Using qualitative methods, the study identifies key components of an innovative cloud-based business model and proposes a conceptual framework to enhance organizational competitiveness.

2 - Literature Review

- **Cloud Computing Concepts and Its Evolution**

Over the past decade, cloud computing has emerged as a transformative technology for modern companies and businesses. Numerous researchers have attempted to define cloud computing, resulting in definitions that share common elements while also reflecting differing perspectives. It is argued that the concept of cloud computing originates from the term "Application Service Provision" (ASP), which first emerged in the 1980s. According to Williams (2012), cloud computing is neither a technology nor an architecture but rather a post-innovation and adoption of computing, networking, and storage technologies designed to reduce costs and time to market.

Grance and Mell (2011) define cloud computing as a model that enables ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources—such as networks, servers, storage, applications, and services—that can be rapidly provisioned and deployed with minimal management effort or service provider interaction. The National Institute of Standards and Technology (NIST) describes cloud computing as a service that facilitates the remote storage and access of required software applications via the Internet. In essence, cloud computing involves the storage and public accessibility of data (Sheikhzadeh et al., 2024), with applications being accessible online rather than confined to a single device. Within this framework, the term "cloud" serves as a metaphor for the Internet. Another widely accepted definition characterizes cloud computing as a model for utilizing ICT services—including networks, services, applications, and servers—wherein scalable services are provided online to both private consumers and enterprises (Al-Dabi & Avison, 2010).

From Justerman's (2015) perspective, as illustrated in Figure 1, cloud computing provides access to a set of manageable and scalable IT resources—such as infrastructure (IaaS), hardware, development platforms (PaaS), and application software (SaaS)—on demand.

A notable example is Amazon's development platforms, which offer customers virtual computing services, including servers, networks, and data storage. These platforms allow users to control, monitor, and implement any operating system and software without owning, managing, or operating the virtual IT infrastructure (Hu et al., 2017). Google, Amazon, and Microsoft are recognized as the pioneering players in the "cloud computing" era (Venteerz & Vidle, 2012).

Industry surveys indicate that marketing, sales, and human resources departments are leading in the adoption of cloud service delivery models, favoring SaaS and IaaS. In contrast, research and development, as well as production sectors, tend to be more cautious due to concerns about the potential unintentional disclosure of intellectual property or production-related information (Al-Raqayan, 2017). Additionally, findings suggest that customers utilize IaaS to support supply chain management activities, which require the processing of vast amounts of complex data.

Software as a Service (SaaS) is extensively used to facilitate customer relationship management and human resource management activities. This lightweight software solution enables the provision of applications that run on cloud infrastructure and can be accessed remotely by client companies through web browsers. SaaS solutions encompass a broad range of applications, from standard tools such as email and office productivity software to sophisticated enterprise resource planning (ERP) systems (Storm et al., 2023).

Grance and Mell (2011) describe the key features of cloud computing as including self-service, on-demand access to shared and managed virtual IT resources over an existing network, priced on a pay-as-you-go basis. Typically, cloud computing consumers do not own the physical cloud infrastructure but instead rent it from third-party providers to avoid capital costs, consuming resources as a service and paying only for what they use. Many cloud computing services operate on a public computing model, allowing users to access them similarly to utilities such as electricity. In other cases, providers offer services through subscription-based models. Sharing "consumable and intangible" computing power among multiple tenants enhances productivity, as it prevents servers from remaining idle, significantly reducing costs while simultaneously accelerating the production and development of applications (Wang et al., 2023).

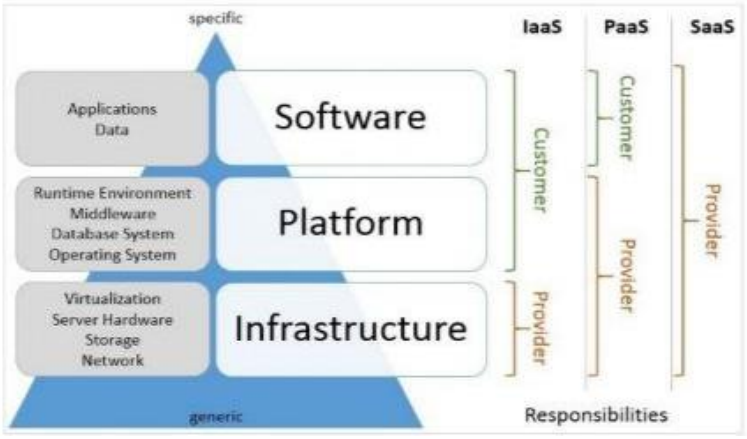

Figure (1). Cloud service (Justerman, 2015)

- **Cloud Technology Maturity and the Gartner Cycle**

The concept of technology maturity positions a technology along the continuum of technological development and aids organizations in formulating their technology strategies. Several frameworks analyze technology maturity, illustrating the evolution of technologies from the embryonic stage to growth, maturity, and eventual decline (Foster, 2012; Russell et al., 1991; Vittorio, 2001). One such framework is

the Gartner Hype Cycle, a graphical representation of the maturity, adoption, and social application of specific technologies over time. Developed and branded by the IT research and consulting firm Gartner, this model outlines five distinct stages in the evolution of emerging technologies. Essentially, the Hype Cycle serves as a strategic planning tool, supporting the evaluation of a technology's development until it reaches full implementation (Moorman & Tushman, 1997; Moorman & Franken, 2006; Srinivasan et al., 2004). As illustrated in Figure 2, during the initial stage, while the technology may exhibit potential applications, the nature of its solutions and its trajectory toward industrial production remains uncertain.

Technological advancements continue to progress during the growth stage, driven by accumulated knowledge, while many initial barriers and uncertainties are eliminated. The maturity stage represents a phase in which the technology is well-established and widely diffused. At this point, incremental improvements and competing designs emerge as various industry players refine and enhance the technology (Yalpanyan et al., 2024).

A practical example of assessing the perceived maturity of technologies in the industry is the annual Gartner Hype Cycle. This model visually represents the life cycle stages of emerging technologies, such as blockchain and Bitcoin, tracing their development from inception to maturity and eventual widespread adoption. According to Gartner Inns (2012), cloud computing has surpassed the peak of inflated expectations and has now entered a more realistic phase characterized by capability assessment, increased testing, and broader implementation of cloud solutions. The next phase in the hype cycle, known as the Slope of Enlightenment, aligns with the growth stage of cloud computing, signifying that cloud technologies have reached a level of proven maturity. This stage facilitates further adoption and expansion of cloud-based solutions (Adero, 2009; Adestrom, 2010).

Key technologies essential for competitive success provide opportunities for meaningful differentiation in processes or products. Their widespread acceptance across industries indicates their potential to become industry standards (Russell et al., 1991; Floyd, 1997). Studies suggest that marketing, sales, and human resources departments are at the forefront of adopting cloud service delivery models, particularly SaaS and IaaS. In contrast, the R&D and manufacturing sectors exhibit a more cautious approach to cloud adoption due to concerns about the unintentional disclosure of intellectual property or production-sensitive information. Despite this hesitancy, cloud adoption trends indicate that marketing, sales, and human resources are leading the transition toward cloud-based business operations (Al-Raqayan, 2017).

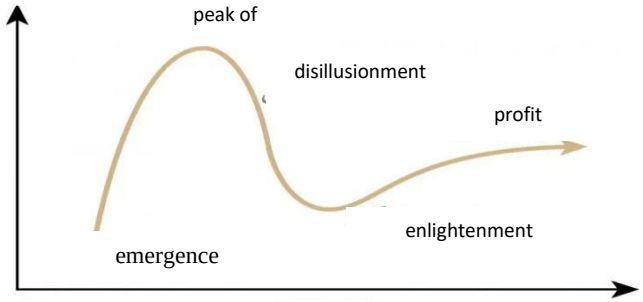

Figure (2) Gartner Hype Cycle (1995)

- **Key Features of Cloud Computing in the Business Path**

Cloud computing has significantly transformed the competitive landscape of modern businesses by utilizing key business enablers, which activate and strengthen business model innovation. As shown in **Figure 3**, some of the core features of cloud computing include cost flexibility, business scalability, market adaptability, hidden complexity, context-based

diversity, and ecosystem connectivity (Wang et al., 2023).

One of the primary reasons many companies are considering the adoption of cloud services is the **cost flexibility** they offer. A scientific study found that over 31% of managers cited the potential of cloud services to reduce fixed IT costs and modify the structure of variable costs as a major advantage. Cloud services allow organizations to shift from capital expenditures to operating expenses, reducing fixed IT costs. Furthermore, cloud applications eliminate the need for organizations to build hardware, install software, or pay for proprietary software licenses. Instead, companies can access these services on demand and pay only for what they use. Additionally, cloud technology enables organizations to scale their business operations easily without requiring simultaneous infrastructure upgrades.

The investment and rapid expansion of computing capabilities have enhanced the appeal of cloud computing to customers. For instance, Netflix, an internet subscription service that streams movies and TV shows on demand, experiences significant spikes in demand during peak consumption times. To manage this, Netflix transitioned its website and streaming services from a traditional data center to a cloud environment. This shift allowed the company to scale its operations and expand its customer base without the need to build and maintain an additional data center (Netflix, 2010).

In today's dynamic economic environment, businesses are increasingly focused on improving their agility to quickly adapt to changing market demands. The cloud model supports this by enabling rapid prototyping, facilitating innovation, and enhancing responsiveness to shifting market needs (Al-Raqayan, 2017).

Figure (3). Cloud-based business innovation(Wang et al., 2023).

Beyond these advantages, cloud services allow organizations to "hide" operational complexities from end users, which broadens their consumer base. For example, system upgrades and maintenance can be carried out "in the background," without requiring direct involvement from users (Kraus et al., 2019). Additionally, cloud technology enables system diversification, making it more user-centric. It also

facilitates collaboration with external partners and customers through ecosystem connectivity, leading to improved productivity and enhanced innovation (Bonken et al., 2019).

- **Cloud Enablement Framework in the Business Path**

The Indicator Under Assessment (IBM) developed the Cloud Enablement Framework, which categorizes organizations into three archetypes: optimizers, innovators, and disruptors. These archetypes are determined by the extent to which an organization utilizes cloud computing and the impact this has on its value propositions and value chains. As shown in Figure 4, the framework highlights how an organization's cloud-based business strategy influences its ability to create customer value and transform or develop new value chains (Netflix, 2010). **Optimizers** use cloud computing to gradually enhance their customer value propositions while improving organizational efficiency. This approach allows them to strengthen customer relationships without taking on the risk of disruptive, untested business models. **Innovators**, on the other hand, leverage cloud services to significantly expand their offerings and create new revenue streams. Through this process, they alter their roles within their industries or venture into adjacent markets (Al-Raqayan, 2017). As they evolve, innovators have the opportunity to integrate previously disconnected elements of the value chain and value proposition, thus gaining a competitive edge.

Disruptors go further by creating entirely new value propositions in response to emerging customer needs, giving them a unique competitive advantage that can disrupt existing industries or markets, or even create new ones. By embracing higher levels of risk, disruptors have the potential to outperform innovators or optimizers in the future, compensating for their risks with higher anticipated rewards (Ties, 2018).

- **Theory of Dynamic Capabilities and Innovation in Business Models**

Dynamic capabilities have emerged as a complement to strategic management theories within the resource-based view (RBV) over the past decade. The growing need for organizations to learn and adapt in complex environments, combined with the demand for effective strategic development since 2000, has driven the rise of dynamic capabilities. According to Bonken et al. (2019), dynamic capabilities are sustainable organizational behaviors that enable the integration, reformulation, renewal, and rebuilding of resources and capabilities. Most importantly, they focus on improving and modernizing core capabilities in response to environmental changes to maintain a sustainable competitive advantage.

One key dynamic capability is integration, which involves the ability to combine new knowledge with operational capabilities within the organization. Another critical capability is assessment, which includes the ability to identify, interpret, and pursue opportunities in the external environment. Studies suggest that dynamic capabilities cannot be directly acquired from the market but are developed internally, relying on the organization's strategic direction. Kraus et al. (2019) argue that dynamic capabilities are sustainable and that an organization that merely adapts to a series of crises creatively but in a disjointed manner does not demonstrate true dynamic capabilities. Furthermore, while dynamic capabilities are associated with strategic change, they are not synonymous with it. The core assumption of the Dynamic Capabilities Framework is that core competencies should be leveraged to address short-term competitive situations, and to create long-term competitive advantage (Barney, 1991; Wernerfelt, 1984).

From this perspective, learning is seen as essential. Employees must be capable of using common communication codes and coordinated search methods to build strategic assets with new technologies. Eventually, these new technological products should be embedded into the organization's procedures and logic. Procedures, in this context, refer to interaction patterns within groups that represent successful solutions to specific problems.

The creation of new strategic assets is another vital dynamic capability, achieved through specific organizational practices, such as linking customer experiences to engineering design choices and coordinating effectively with factories and suppliers. This enables organizations to acquire new strategic assets from external sources (Mohammadnejad-Chari et al., 2023). The third dynamic capability involves altering the company's asset structure and undergoing internal and external transformations in response to rapid market changes. This capability depends on scanning the environment, assessing markets, accelerating change, and responding faster than competitors. Such processes can be supported by

decentralization or the establishment of strategic coordination and alliances (Ties, 2018). As illustrated in Figure 5, the theoretical and practical significance of developing and applying dynamic capabilities in organizations operating in complex and highly variable external environments has made this a focal point in the research agenda of many scholars (Al-Raqayan, 2017).

In this theory, dynamic capabilities include the measurement, recording, and transformation capabilities required for business model design, implementation, and innovation (Ties, 2018) and depend on managerial capabilities to identify opportunities, allocate resources to develop and modify parts of the business model and create structural and cultural alignments that lead to changes in the company and its business model (Foss and Saebi, 2017).

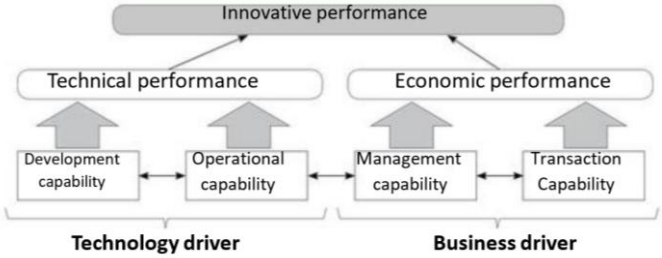

Figure (5). Innovative organizational model

- **The process of business advancement with the help of cloud computing from a knowledge perspective**

In the path of innovation of the stage-based business model (BMI) of cloud sourcing, according to Figure 6, the management of companies should use three types of dynamic capabilities, including measurement, discovery, and transformation capabilities, to move from one stage to another; dynamic links should be overcome at each dynamic stage. Also, the design and adjustment of the modular structure of cloud sourcing, that is, systems and data storage capacity, by the cost structure is a way to reconstruct the value proposition for customers, including dynamic stages in the new cloud-based business model. According to the presented model, the design of the basic package with specific digital tools and other organizational procedures on safety and maintenance principles, to create and provide value to the customer, adding modules with more advanced digital tools based on augmented sensor capabilities, as well as online monitoring and big data analysis, are other functions of cloud computing in the new business model, which can increase device reliability and uptime through predictive maintenance. Therefore, dynamic complexity is characterized by significant changes in business model capabilities and relationships with cloud-sourcing partners (Ties, 2018). In this path, cloud providers do not need to go through discrete development stages but rather through nonlinear stages divided by dynamic stages. Surveys show that most of the research conducted in this area is around the issue of business model generation and development as well as the creation of lean startups, while the evaluated index (IBM) in the field of entrepreneurship includes revising the business model based on customer needs and realigning processes, resources and profit generation in light of the new value proposition (Kim et al., 2005), as well as distinctive business operations, processes, choices and other rationales for creating value and earning sustainable income (Magretta, 2002).

3. Background of the Research

According to Eurich et al. (2014), IBM is a tool that seeks to achieve competitive advantage by creating and recreating business models and changing at least one of the components of the current.

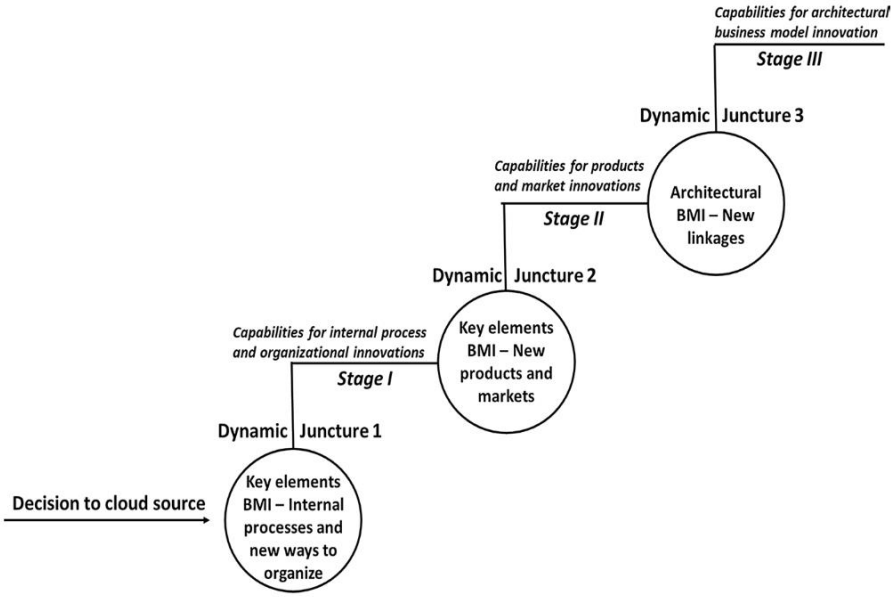

Figure (6). Stage-based Business Model Innovation Path Model (BMI) related to cloud sourcing

Business model. However, reaching the minimum threshold for IBM when limited to one component may not be sufficient for most organizations unless they offer very strong value propositions to end users (Chesbroo, 2010). Therefore, a distinction can be made between innovations in key elements and architectural or configuration innovations, as used by Claub et al. (2019). For example, in business model innovation in companies operating in the electronics industry (2019), examples of innovations in key elements related to cloud sourcing could be the introduction of new software as a service (SaaS) or the introduction of a new internal process based on SaaS or new platforms (PaaS). One of the key elements in strategy formulation is the attention to the formulation of value propositions in business model design, which may lead to confusion and interpretation problems regarding the formulation of value propositions in the business model canvas (Anderson et al., 2006). From a traditional perspective, the competitive impact of technologies is related to product and service differentiation and not to differences in business models. Such a view is based on an old school of thought about innovation and competitive advantage, according to which technological innovation leads only to product or process innovation. However, in recent years, more attention has been paid in the research community to the concept of business model innovation as a complementary element in the process of value creation from technological innovation (Chesbroo et al., 2003-2008).

4- Methodology

Since this research seeks to identify the factors affecting the new business model based on cloud computing, it is fundamental in terms of purpose and mixed in terms of method, exploratory with an emphasis on qualitative data. In the qualitative method, using the meta-synthesis tool that includes the seven-step model of Sandelowski and Barso (2007), first, through a review of reputable scientific articles and interviews with experts, the factors affecting the new business model based on cloud computing were identified, evaluated, and systematically analyzed. Then, in the quantitative method, the identified factors were ranked using the Shannon entropy tool. The statistical population of the research was purposefully selected from among experts who were 1- university professors in accounting, finance, or technology and IT management and 2- senior managers of two institutions that have implemented and implemented cloud computing technology as pioneers for 3 years in

Iran. The obtained sample also includes 15 experts, which according to the researchers' theory, to achieve the interviewees' perspective and to realize the theoretical saturation principle, the number of 12 interviewees is acceptable and results in the realization of the research objectives (Hariri, 2006). Sandelowski and Barso's seven-step model (2007) to achieve the desired model includes the following steps:

Table 1: Selected terms for searching databases

Term
Business models
New business model
Business model innovation
Cloud sourcing
Stage-based model
Dynamic Capability Theory

Step one: Setting the research question, which includes the following questions: 1) What factors affect cloud computing-based business according to dynamic capability theory? 2) How does the prioritization of factors affect cloud computing-based business according to dynamic capability theory? 3) According to dynamic capability theory, what is the cloud computing business model in Iran?

Step two: Systematic literature search. In this step, the researcher systematically searches for articles published in reputable and relevant domestic and foreign scientific journals using keywords. The selection of keywords for the search is initially general and then more specific. For this purpose, the words in Table 1 were examined individually or in combination in Persian and English.

Given the aim of developing thematic content in this article, the search was not limited to specific journals or specific years of publication (Hatzenschneider and Hrosteck, 2013). The databases examined also included sites like Scopus and Web of Science, the Persian sites of the Jahad Daneshgahi Scientific Information Center[1], the Noor Specialized Journals Database[2], the Iranian Scientific Information Databases[3], and Elm-net[4], as well as the Business and New Technologies Journals website. In total, 3520 articles were identified in the period 2012-2014 and 2013-2023, based on the initial conditions. After reviewing the titles, abstracts, and keywords for topical relevance and removing duplicates, all articles classified as definitive or probable were read in full. Then, articles that were not related to business or cloud computing dimensions or that focused on other areas instead of the financial field were also removed. Finally, 20 English and 20 Persian articles were selected and subjected to a final review based on Table 2. A summary of the methodology can be seen in Figure 4.

Step Three: Searching and Selecting Appropriate Texts: In this step, after several readings and filtering of the articles, various parameters such as title, abstract, content, article details (author's name, year, etc.) were considered, and articles that did not fit the research question and purpose were eliminated.

Step Four: Extracting Text Information: In this step, after careful examination of the title, abstract, and content of the article, several sources were found and eliminated, and 52 selected articles were entered into the CASP (Critical Assessment Skills Program) to determine validity so that each article would be evaluated and scored according to 10 qualitative conditions, and based on each of these conditions, a score between 1 and 5 would be assigned to each article. Based on this program, articles with a total score of 25 or higher would be approved in terms of quality, and the remaining articles would be eliminated. The criteria considered for the CASP method in this study are 1) the suitability of the article's objectives with the research objectives, 2) the topicality of the topic, 3) the article's design, 4) the sampling method, 5) the method and quality of data collection, 6) the degree of reflectivity and the possibility of expanding the results of the article, 7) the extent and manner of observing common ethical points in the field of article writing, 8) the degree of accuracy in data analysis, 9) the clarity of expression in presenting the findings, and 10) the overall value of the article.

The maximum score that each article receives based on the CASP scale is 50 points, given the existence of 10 criteria, the maximum score of which is 5 for each. Based on the rubric classification, there are 5 classification groups, including poor (0 to 10), average (11 to 20), good (21 to 30), very good (31 to 40), and finally excellent (40 to 50), and any article

[1] https://www.sid.ir/fa/journal/
[2] https://www.noormags.ir/
[3] https://ganj.irandoc.ac.ir
[4] https://elmnet.ir

that scores less than 25 points is eliminated. After scoring, 12 articles with scores less than 25 were eliminated, and finally, 40 final articles were selected as the study sample for evaluation. Table 2 summarizes the components of the new business model based on cloud computing after eliminating articles that scored less than 25.

Based on the research findings, the CASP score of 12 Persian and 16 English articles is 35 and above, indicating the research tool's validity. Also, the score of Persian articles varies between 31 and 44; in other words, the lowest score of Persian articles is 31, and the highest score is 44.

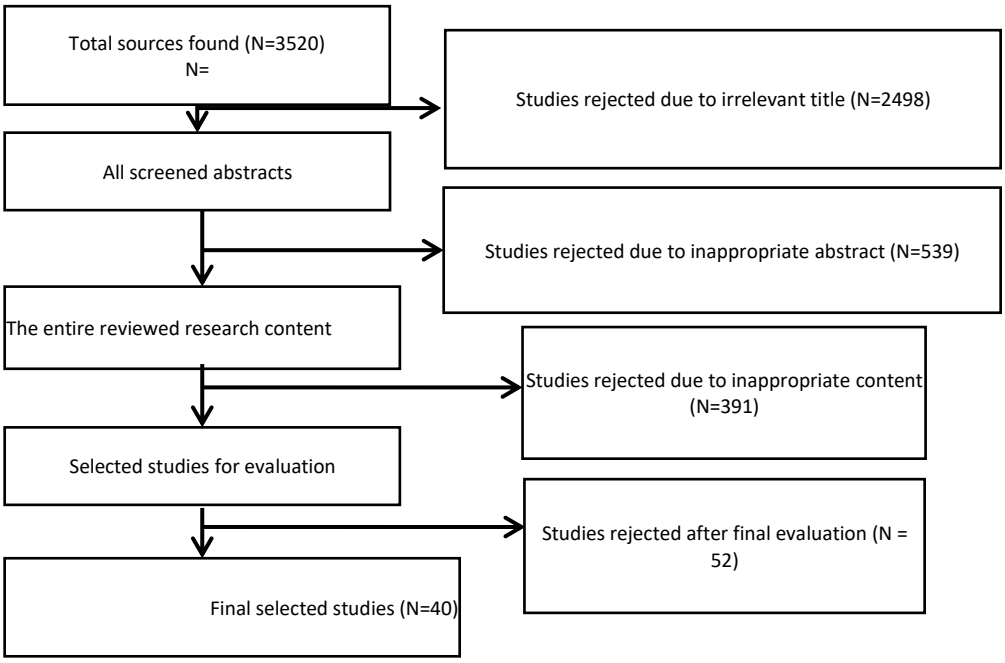

Figure (7). Process and number of sources reviewed in meta-synthesis (Source: Researcher's findings)

Table 2- List of final selected articles studied

CASP score	Identified factors	Researchers	Title of the article	row
31	Organizational, human, project management, and technical factors	Zare Ravasan, et al. (2013)	Identifying and categorizing critical success factors for business intelligence systems implementation projects in Iran.	1
34	Agility, alignment, Strategy Information Technology, and Strategy acquisition work with organizational Agility, two next Communication and skills: dimension level merit/value, level applied discretion, Participation, and area action.	Shahsavari Pour,et al. ۲۰۱۶)).	The relationship between IT and business strategy alignment with organizational agility in software companies.	2
33	Development systems Information in global class, increase efficiency and effectiveness, organizational productivity, stable competitive advantage	Sabet Rasekh, et al. (2023)	A model for evaluating world-class information systems with a balanced scorecard approach in sports organizations	3
39	Facilitating conditions: technical infrastructure, website information quality and transparency, site security,	Sheikh Zadeh, etal. (2024)	A model for online donation intention for crowdfunding charities in Iran.	4

CASP score	Identified factors	Researchers	Title of the article	row
	application and privacy, perceived risk, enjoyment of helping others, performance expectations, and social impact.			
42	Organizational readiness and planning for implementing change, recognition, design and evaluation, culture, and changing factors affecting information technology	Salehi Sedqiani, et al. (2012)	Explaining the relationship between factors affecting perishable food supply chain processes based on cloud-based Internet of Things	5
39	Environmental factors, technological factors, organizational factors	Thaghafi, et al. (2022)	Explaining the relationship between factors affecting perishable food supply chain processes based on cloud-based Internet of Things	6
38	Components of online sales, digital marketing, suppliers, leadership, human resources, organizational culture, customer, market, and organizational structure, organizing e-commerce-based businesses, including technical, organizational, environmental, economic, and financial dimensions	Gaffari Ashtiani, et al. (2024)	Identifying factors affecting the management and organization of e-commerce-based businesses through a meta-synthesis approach.	7
37	Obtaining up-to-date information, having multiple skills and ethics of consultants), causal conditions (online business including five categories of efforts to acquire specialized knowledge, mastery of information and communication technology, online business experience, having order and discipline at work and flexible management), contextual conditions (government management performance, government structural performance, growth of consulting culture in society), intervening conditions (instability and lack of structure of the economy in Iran, inefficient bureaucracy, lack of laws supporting business owners and weaknesses within the profession), strategies (systematic and planned strategies by the government, acquiring up-to-date knowledge and information in the field of online business, practical and applied training in online business, having the power of discernment, using the experience of others and reference groups in one's field of work) and consequences (strategic thinking, self-empowerment, civic ethics in performing job duties, performance management)	Rafii, et al. (2023)	Designing a paradigmatic model of job competencies for online business consultants and its implications	8
38	Value proposition, value creation, value delivery, and value capture of the products offered; how market data is owned and transactions are directed; pricing models and revenue streams; mechanisms for protecting the privacy and securing transactions; methods for ensuring mutual trust; and other characteristics of market data.	Mohammad Nejadchari, et al. (2023)	Prototype development for market data platforms business model.	9
41	Virtual organization and network theories, environmental, organizational, and technological requirements	Muhammadian, et al. (2014)	Systematic review and future directions of research in the field of virtual business growth centers.	10
39	Cloud service providers, customers, service type, system type	Mazaheri, et al. (2023)	A comprehensive framework for selecting cloud service providers (CSPs) using a meta-synthesis approach.	11
44	Financial development, technological development, strategic development	Sasan, et al. (2022)	The role of intelligent business systems in improving organizational performance: A meta-analytic approach.	12

CASP score	Identified factors	Researchers	Title of the article	row
33	Organizational Adaptation, Business Intelligence	Puti et al. (2017)	A Model for Adapting Educational Organizations to Business Intelligence Requirements	13
35	Financial analysis parameters include current, quick, debt-to-equity ratios, net profit margin, cash flow ratio, and rate of return.	Mohammadi Raz, et al. (2023)	Intelligent management of social and environmental factors of businesses to achieve profitability.	14
33	Internal coordination, external coordination, and synergy of necessary data, factors of integration of organizational processes and strategies	Muhammadian, et al. (2014)	Factors Affecting the Selection of Small and medium-sized e-business Models in Iran	15
34	Structure of financial institutions, financial technology developers and business environment system models, customer segmentation, improving the business environment, improving organizational performance	Asadullah, et al. (2021)	Designing an open banking business model in the light of open innovation	16
36	Internet connection quality, awareness of electronic banking services, perception of usefulness and ease of use on electronic banking acceptance, trust	Bakhshi, et al. (2016)	A model for Electronic Banking adoption considering customer Trust Factor	17
34	Predictive, corrective, comprehensive productive maintenance and outsourcing strategies	Shafiei Nikabadi, et al. (2013)	Maintenance strategies and business performance. Quarterly Journal of Strategic Management Studies, 3(9), 115-132.	18
32	Knowledge management strategies with a multi-criteria decision-making approach, implementing a knowledge management system in the organization	Nezafati, et al. (2013)	Business knowledge management strategy	19
39	Knowledge management capabilities, business models and organizational innovation, knowledge management strategies, maturity level of Industry 4.0 technologies	Entezarian, et al. (2024)	The impact of knowledge management and Industry 4.0 technologies in organizations: A meta-synthesis approach	20
42	Three types of dynamic capabilities, sensing, capturing, and transforming capabilities,	Muhic & Bengtsson. (2021).	Dynamic capabilities triggered by cloud sourcing: a stage-based model of business model innovation	21
36	Creating innovation, competitive advantage	Willcocks L, et al. (2013b)	Moving to the cloud corporation: How to face the challenges and harness the potential of cloud computing.	22
35	Cloud providers, continuous use of cloud resources	Teece DJ (2018)	Business models and dynamic capabilities.	23
36	Models based on the innovation stage, business model, and dynamic capability of the company	Sturm, M., Weking, J., Böhm, M. et al(2023)	How two leading partners learn to tango: The case of IoT-based business model co-innovation between a retailer and an electronics supplier	24
37	Cloud sourcing, related technologies as drivers, and enablers of business model innovation	Muhic M, Johansson B (2014)	Cloud sourcing—next-generation outsourcing?	25
41	The evolution of dynamic capabilities, the evolution of the cloud-sourcing company	Legner C, et al. (2017)	Digitization: opportunity and challenge for the business and information systems engineering community.	26
45	The evolution of cloud sourcing companies, cloud-based business model innovation	Kraus S, et al. (2019)	Digital entrepreneurship: a research agenda on new business models for the twenty-first century.	27
40	Product and market innovations, acquisition, and merger candidates for new markets and new products	Spieth P, et al. (2014)	Business model innovation - state of the art and future challenges for the field.	28
44	New sales process, integrated teams, customer focus, IT department reorganization, new capabilities	Clauß T, Bouncken RB, Laudien S, Kraus S (2019)	Business model reconfiguration and innovation in SMEs: a mixed-method analysis from the electronics industry.	29

CASP score	Identified factors	Researchers	Title of the article	row
38	Developing digital and smart tools based on cloud technology, introducing new services on Internet of Things platforms	Bouncken RB, Kraus S (2013).	Innovation in knowledge-intensive industries: the double-edged sword of cooperation.	30
36	New internal processes, new ways of organizing new markets, sensors, digital platforms, increased predictive maintenance capabilities	Schneider S, Sunyaev A (2016)	Determinant factors of cloud-sourcing decisions: reflecting on the IT outsourcing literature in the era of cloud computing.	31
39	Need to have high technical skills and knowledge, be at the forefront of new technological advancements in the use of specific clouds	Bouncken RB, et al. (2016)	Entrepreneurial orientation in vertical alliances: joint product innovation and learning from allies.	32
40	Staff training, external operation consultant, training, and appointment of an ERP specialist	Bharadwaj A, et al. (2013)	Digital business strategy: Towards the next generation of insights.	33
34	Testing sensors at industry manager sites, developing digital tools, paying attention to the cloud technology approach	Wang, M., Yao, J. (2023)	Replenishment and delivery optimization for unmanned vending machine service systems based on fuzzy clustering	34
38	Understanding existing structures, identifying and integrating business model innovation drivers, new internal processes, and new ways of organizing	Weking, J., et al. (2020)	Practices for open business model innovation - An infomediaries perspective.	35
33	Business model innovation, product innovation, market innovation	Bouncken, RB, Roig-Tierno N, Kraus S (2019	) Knowledge- and innovation-based business models for future growth: digitalized business models and portfolio considerations.	36
28	Internal processes, organizational innovations, the need to have high technical skills and knowledge, being at the forefront of new technology advancements in the use of cloud computing	Foss NJ, Saebi T (2017)	Fifteen years of research on business model innovation: How far have we come, and where should we go?	37
29	New links between key elements. Existing routines and structures	Salvato C, Vassolo R (2018)	The sources of dynamism in dynamic capabilities.	38
40	Entering new markets with a centralized system	Foss NJ, Saebi T (2018)	Business models and business model innovation: between wicked and paradigmatic problems.	39
36	Cloud Sourcing, Related Technologies, Drivers, Business Model Innovation Enablers, Model Architecture	Ratten V (2016)	Continuance use intention of cloud computing: innovativeness and creativity perspectives.	40

The scores of English articles also varied between 28 and 45; in other words, the lowest score was 29, and the highest score was 46.

Step Five: Analyzing the qualitative findings of the research. First, according to Table 4, all extracted factors are considered codes, and based on the meaning of each code, they are categorized into similar concepts.

Step Six: Quality Control and Content Analysis: In this step, the validity of the questionnaire was carried out through the Shannon entropy method. The findings were provided to 15 experts in the three specialized fields of accounting, finance, and technology for review and comment, and their corrective comments were applied to the questionnaire. Table 5 shows the demographic information of the experts.

To determine the level of reliability, the components identified in the proposed model were coded and measured through Cohen's Kappa coefficient (Kappa index). Given that the Kappa coefficient is greater than 0.6, the components of the proposed model have the necessary reliability. Table 6 presents the coding of the two evaluators for the components of the modern business model based on cloud computing.

Table 4: Coding of factors affecting cloud computing-based business

Open coding	Sub-factors	Axial coding	Factors affecting cloud computing-based businesses
C01	Dynamic section and key elements	C1	Dynamic capabilities
C02	Business model innovation	C1	
C03	Empowering key elements	C1	
C04	Element Capability Stage	C1	
C05	Dynamic section and innovation in the model	C1	
C06	Architecture	C1	
C07	Problems communicating with customers	C2	To feel
C08	Cloud Sourcing Features and Technology	C2	
C09	Sales staff training	C2	
C10	Internal staff and external consultants	C2	
C11	Super users	C3	Interviewees
C12	Foreign consultants	C3	
C13	Internal ERP Specialist	C3	
C14	Information Technology Manager	C3	
C15	External cloud partners	C3	
C16	Website	C3	
C17	Industrial sites	C3	
C18	Cloud brokerage	C3	
C19	Introducing and implementing users	C4	Becoming
C20	Reducing nightly demand for cloud	C4	
C21	ERP implementation	C4	
C22	Implementing a cloud specialist in the organization	C4	
C23	Appointment and implementation of SVP	C4	
C24	Digital Development Manager	C4	
C25	Employee training	C5	confiscation doer
C26	Foreign consultant reviews night operations	C5	
C27	Cloud specialist training and appointment	C5	
C28	Cloud specialist training and appointment	C5	
C29	Entering new markets	C5	
C30	Testing sensors on site	C5	

Table 5: Characteristics of Expert Respondents

work history	age	job	education	gender
18	43	Faculty member of Financial Management	Ph.D	Male
11	38	Financial manager	Master's degree	Male
17	44	Technology Manager	Master's degree	Female
21	45	Technology Faculty Member	Ph.D	Male
19	46	Financial manager	Master's degree	Male
24	54	Member of the Accounting Faculty	Ph.D	Female
26	53	Member of the Accounting Faculty	Ph.D	Male
23	49	Technology Manager	Master's degree	Male

work history	age	job	education	gender
20	47	Official accountant	Master's degree	Female
19	46	Member of the Accounting Faculty	Ph.D	Male
20	43	Financial manager	Master's degree	Male
17	48	Faculty member of Financial Management	Ph.D	Female
15	42	Official accountant	Ph.D	Male
20	45	Member of the Accounting Faculty	Ph.D	Male
18	46	Technology Manager	Master's degree	Female

Table 6: Coding of the two evaluators

Encoder ۲	Encoder ۱	Agents sub	Codes
1	1	Dynamic section and key elements	C01
1	1	Business model innovation	C02
1	1	Empowering key elements	C03
1	1	Element Capability Stage	C04
1	1	Dynamic section and innovation in the model	C05
2	2	Architecture	C06
2	2	Problems communicating with customers	C07
2	2	Cloud Sourcing Features and Technology	C08
2	2	Sales staff training	C09
2	2	Internal staff and external consultants	C10
3	3	superusers	C11
3	3	Foreign consultants	C12
3	3	Internal ERP Specialist	C13
3	3	Information Technology Manager	C14
3	3	External cloud partners	C15
3	3	Website	C16
3	3	Industrial sites	C17
3	3	Cloud brokerage	C18
4	4	Introducing and implementing users	C19
4	4	Reducing nightly demand for cloud	C20
4	4	ERP implementation	C21
4	4	Implementing a cloud specialist in the organization	C22
4	4	Appointment and implementation of SVP	C23
4	4	Digital Development Manager	C24
5	5	Employee training	C25
5	5	Foreign consultant reviews night operations	C26
5	5	Training and appointment of layer specialist	C27
5	5	Cloud specialist training and appointment	C28
5	5	Entering new markets	C29
5	5	Testing sensors on site	C30

Step seven: Presentation of findings. The findings from the previous steps show that 5 main factors and 30 sub-factors were identified for the proposed modern business model based on cloud computing, presented in Figure 2. These factors include: 1) Dynamic capabilities including dynamic section and key elements, business model innovation, enabling key elements, element capability stage, dynamic section and innovation in the model 2) Sensing including architecture, customer relationship issues, cloud sourcing features, and technology, training internal staff and external consultants 3) Interviewees including super users, external consultants, internal ERP specialists, IT manager, external cloud partners,

websites, industry, and cloud brokers 4) Transformation including user introduction and implementation, reducing demand for cloud, ERP implementation, implementing cloud specialist in the organization, appointing and implementing SVP and digital development manager and finally 5) Confiscating including vendor training, external consultant reviewing night operations, training and appointing layer specialist, training and appointing cloud specialist, entering new markets and testing sensors on site.

The Shannon entropy method, which performs very strong data processing in content analysis, has also been used to rank the main components of the model. For this purpose, first, the experts' opinions were asked in the form of numbers 1 to 20 to examine the importance and rank of each factor. The answers were then entered into an Excel spreadsheet and normalized. The ranking of each factor is presented in Table 7.

Table 7: Ranking of the main factors of modern business based on cloud computing using the Shannon entropy method

Confiscating	Becoming	Interviewees	To feel	Dynamic capabilities	
8.7482	8.9143	8.9348	8.9241	8.9144	Ej
0.2337	0.2348	0.2425	0.2421	0.2419	Wi
5	4	1	2	3	

5 - Findings

As the results of Table 7 show, among the five factors affecting the components of a new cloud-based business, the interviewees, including super users, external consultants, internal ERP experts, IT managers of external cloud partners, websites, industrial sites, and cloud brokers, have the greatest impact on a new cloud-based business and are ranked first. Based on this, it can be concluded that every company in the process of launching its new business seeks to understand how, when, and why data transfer occurs in the strategic innovation of cloud sourcing. To understand this, the dynamic capability perspective conceives the firm as a heterogeneous set of dynamic capabilities that are semi-permanently related to management, and if there are deficiencies and weaknesses in the firm's dynamic business capabilities, it may limit the use of cloud sourcing and business model innovation in the firm (Bharajeh et al., 2013); therefore, the value of the firm's strategic resources decreases over time as competition becomes more widespread, and the only competitive advantage that will remain over time is the ability to develop, reconfigure, and delegate the firm's business capabilities in a more effective way than its competitors (T.C., 2018).

Based on the research findings, in the second place, the sensing component, including factors such as architecture, difficulties in communicating with customers, cloud sourcing features and technology, and training of internal employees and external consultants, impacts the new business based on cloud computing. Meanwhile, since the dynamic capabilities required for the design, implementation, and innovation of the business model include measurement, capture, and transformation, to achieve the goals of implementing this type of strategy, it is essential that factors such as management competencies in identifying opportunities, modifying parts of the business model, and allocating the necessary resources to develop and overcome existing challenges in communicating with customers, as well as structural and cultural alignment to change the company and its business model, along with training sales staff and internal employees, be considered (TC, 2018). According to experts, by using internal processes and organizational innovations and using key elements of business model innovation, most of the problems related to the implementation of cloud computing can be solved by introducing new procedures/processes and making minor changes in organizational structures, such as appointing specialists and a new type of technological structures and enabling employees and systems to work well from a technical and operational point of view. In addition, experts, in cooperation with cloud providers and external consultants, regularly identify internal process improvements and changes and use the benefits of cloud-sourcing flexibility. Based on the findings of this research, the proposed new business model based on cloud computing is presented in Figure 8. Based on the research findings, in terms of

prioritization, dynamic capabilities, including dynamic stage and key elements, business model innovation, enabling key elements, element capability stage, dynamic stage, and innovation in the model are ranked third. However, in the path of product and market innovations, cloud sourcing and related technologies are considered drivers of product innovation and geographical expansion of the business model, which can take an effective step towards the transformation of the modern business process by creating new opportunities in technology and product development, marketing and sales.

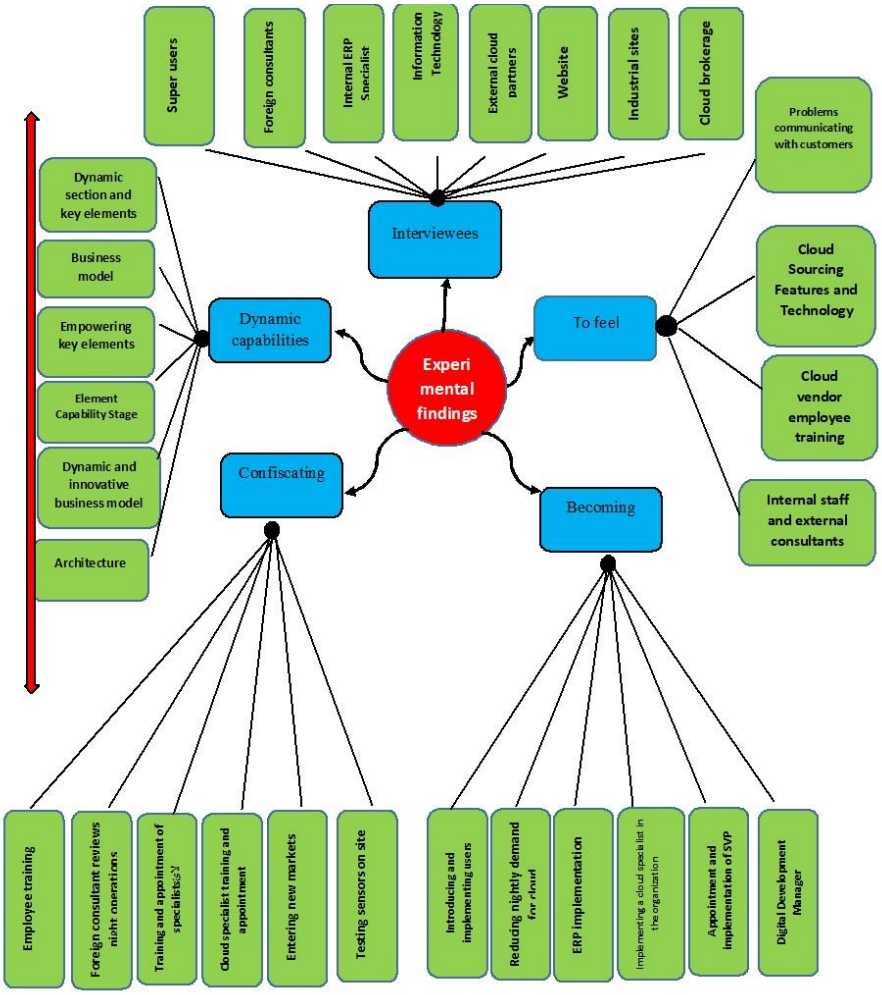

Figure (8). Modern business model based on cloud computing

According to these findings, the transformation component, including factors such as reducing nightly demand for cloud, implementing ERP, implementing a cloud specialist in the organization, appointing and implementing an SVP and a digital development manager, ranked fourth in terms of prioritization of

new cloud-based business factors, and finally, in terms of prioritization, the confiscation factor, including training vendors, an external consultant reviewing night operations, training and appointing a cloud specialist, entering new markets, and testing sensors on site, ranked last in the new cloud-based business model. In this path, cloud sourcing and related digital technologies are considered drivers and enablers of strategic architectural and digital innovation in the new cloud-based business model. Therefore, the transformation of the organizational structure with closer communication between business and IT managers, as well as development meetings and interactions with cloud partner companies, together with virtual customer-centric integrated sales teams and the modular structure of cloud sourcing and finally digital technologies, ensure that the procedures and structures for understanding, attracting and integrating candidates are essential and instrumental not only for key elements in the business model but also for new links between key elements in the business model architecture. In addition to paying attention to dynamic capabilities on how the company competes, it is necessary to pay special attention to technological possibilities, namely the development of new technology as one of the common drivers for creating business opportunities; because the adoption of a new technology, such as cloud computing, which, while enabling the sourcing of IT systems in a new way, may initiate a transformation process that is driven by the company's dynamic capabilities. Based on the strength of dynamic capabilities, it is possible to determine the speed and degree of renewal and reconfiguration of conventional resources and capabilities in response to market changes.

6- Discussion and Conclusion

Since today the development of information technology and its innovation capabilities in the field of business is considered as one of the main competitive advantages of institutions, focusing on the dynamic capabilities of the institution through the performance of information technology has become one of the main management topics. Therefore, this research aimed to answer the following questions: (1) What factors affect the new business based on cloud computing? (2) How are prioritizing factors affecting the new business based on cloud computing? And (3) What is the new business model based on cloud computing?

To achieve these goals, in the qualitative part, using the seven-stage model of Sandelowski and Barso (2007), the identification, evaluation, and systematic analysis of domestic and foreign research on cloud computing-based business in the financial field during the years (from 2010 to 2023 English and 1390 to 1403 Islamic) were carried out, and finally 40 articles were selected based on the CASP scale. Then, the factors and criteria identified in this stage were reviewed and approved from the perspective of 12 experts. The open-coding method was used to analyze and synthesize the qualitative findings. Also, the research findings were ranked using the Shannon entropy technique, and finally, after performing the meta-synthesis steps, the new business model based on cloud computing was presented, including 5 main factors and 30 criteria. The identified factors are: 1) Dynamic capabilities including dynamic section and key elements, business model innovation, enabling key elements, element capability stage and dynamic section and innovation in the model 2) Sensing including architecture, problems in establishing relationships with customers, cloud sourcing features and technology, training internal employees and external consultants 3) Interviewees including superusers, external consultants, internal ERP specialist, IT manager of external cloud partners, website, industrial sites and cloud brokerage 4) Transformation including introducing and implementing users, reducing overnight demand for cloud, implementing ERP, implementing a cloud specialist in the organization, appointing and implementing an SVP and a digital development manager and finally 5) Confiscating including training vendors, external consultant reviewing operations, training and appointing a cloud specialist, entering new markets and testing sensors on site. Also, based on the research findings, the factors had appropriate validity and reliability.

In response to the second question, based on the results of Shannon entropy, among the five factors affecting the components of a new business based on cloud computing, the interviewees, including superusers, external consultants, internal ERP specialists, IT managers, external cloud partners, internet sites, industry and cloud brokerage, have the greatest impact on the new business based on cloud computing and are ranked first. In second place, sensing, including architecture, problems in establishing relationships with customers, cloud

sourcing features and technology, and training of internal employees and external consultants, have an impact on the new business based on cloud computing. Based on the research findings, dynamic capabilities, including dynamic section and key elements, business model innovation, enabling key elements, capability stage of elements, and dynamic section and innovation in the model, are ranked third in terms of priority. Also, according to the research findings, transformation including user introduction and implementation, reducing overnight demand for cloud, ERP implementation, implementing a cloud specialist in the organization, and appointing and implementing an SVP and a digital development manager are ranked fourth in terms of prioritization of new cloud-based business factors, and finally, the expropriation factor including employee training, an external consultant reviewing operations, training and appointing a cloud specialist, entering new markets, and testing sensors on site are ranked last in terms of prioritization in the new cloud-based business model.

Based on these findings, it can be concluded that the development of new technologies, such as cloud computing, is one of the common drivers for creating business opportunities, including new strategies on how to compete in the company's business model, which enables the sourcing of IT systems in a new way. It also leads to a novel and specialized design in the key elements of a company's business model or the architecture connecting the elements and mechanisms of value creation. Accordingly, it may initiate a transformation process that reflects new forms of organizational flexibility driven by the company's dynamic capabilities and can be used to innovate its business model. In addition, adopting cloud service delivery models leads to the creation of new revenue sources and a reduction in the company's IT assets' capital cost. The findings of this section are consistent with the results of research by Wang et al. (2023), Woking (2020), and Clubb et al. (2019). On the other hand, based on the research findings, although the role of technical innovation, such as cloud computing, is well known as a driver for business model transformation, there is still no coherent view of the transformation process in companies or between partner companies based on the theory of dynamic capabilities. While the theory of dynamic capabilities emphasizes the need for companies and their management to change and innovate continuously and intensively, it also takes into account the organizational structures and cultures related to the path and their role in applying new technologies in organizational business models and considers the process of changes or their resistance to change in this path. In addition, by dividing the time, the theory of dynamic capabilities manages the process of implementation activities to implement cloud computing-based innovation business models in a dynamic environment. In addition, a non-business environment, such as traditional IT operations and outsourcing solutions, may exacerbate development constraints. According to the dynamic capability perspective, to progress through the stages of business model innovation, cloud-sourcing companies need to develop and deploy relevant dynamic capabilities (Ties, 2018). The findings in this section are consistent with the results of research by Strom et al. (2023), Cross et al. (2019), and Langer et al. (2017). Moreover, since business model innovation is crucial for companies to stay competitive, respond to market changes, and generate sustainable growth, it enables companies to deliver increased value to customers, optimize operations, seize new opportunities, and ultimately drive long-term success in a rapidly evolving business landscape. However, the model presented in this study, which describes the stages and stages of business development associated with the adoption and continued use of cloud sourcing, shows a linear development path in which the absence or weakness of dynamic capabilities makes it difficult or impossible to move to the next stage of the model and prevents further business model innovation. To address this challenge, sensing capabilities alone are not enough, and capture and transformation capabilities must also be available. Since IT performance is considered part of this study's cloud computing process environment, its entire IT performance has not been systematically studied. However, it is clear from the research findings that IT function and its capabilities are key in measuring, discovering, and changing the business model related to cloud computing.

The proposed research model shows that the IT function, to lead and manage the collaboration with cloud providers, first organizes technical issues and key internal elements in the business model, namely internal processes and organizational innovations, and then designs and depicts a more commercial path with innovation in key elements in new products/services and markets. In this path, the most difficult and

complex type of business model innovation is architectural innovation, which requires changes in the linkage of key elements of the business model and is based on dynamic capabilities that integrate the business IT function with the technical top management function. Overall, our model is consistent with the research conducted by Willcocks et al. (2013) and accepts cloud computing on business model innovation and the future of IT function. Certainly, firms with more developed and robust dynamic capabilities associated with cloud sourcing may be able to implement a faster and more complete process, but according to our model, there will still be a temporal pattern (Halfat & Pitraf, 2003). Although cloud computing is still an evolving technology and the available research on its impact in practice is limited, it must be acknowledged that given the technology's focus on performance and its traditional role in providing internal services and separating IT and business departments (Legner et al., 2017; Vithayathil, 2018), the potential for cloud sourcing to become a driver of strategic innovation remains problematic and challenging (Vithayathil, 2018). Although Willcocks et al. (2013), in their empirical research on cloud computing and innovation, concluded that the pace of progress through cloud computing that drives innovation in companies seems surprisingly slow, and in this direction, technological challenges are among the most important obstacles. However, the findings of this study confirm that although technological issues are challenging and an obstacle to further business development in the early stage, in the later stages of business development, the lack of dynamic capabilities that combine business IT competencies with realignment of internal structures and culture, as well as establishing a good continuous innovation dialogue with cloud provider partners, are more important challenges in the path to creating innovative business models.

Adopting cloud delivery models leads to redesigning the value chain that includes business units, the ICT department, and cloud solution providers. It is suggested that a shared vision be developed among stakeholders on how to redesign value and create a governance model to enable the successful deployment of cloud service delivery models through collaborative collaboration. Without such a prerequisite, there is a risk of cloud solutions being overexpanded, which could erode the cost advantage over time. It is also suggested that, given the need for more senior staff capable of tackling complex business problems, new roles, competencies, and skills must be defined for staff to guide the selection and use of cloud solutions. In addition, since many innovations are created through partnerships with cloud providers, it is recommended that institutions increase the quota for inter-organizational innovation collaboration. It is also recommended that institutions integrate IT functions and business functions and review their architecture to realize the innovation of a new business model based on cloud computing. On the other hand, it is recommended that managers, when starting to implement cloud computing and gradually transferring business systems to the cloud, encounter new problems such as frequent updates, programs, and systems, which leads to confusion among system users; therefore, the need to provide special training to help users is felt. It is also recommended that institutions accelerate and facilitate the procedures and structures for developing business models by holding regular meetings with cloud technology providers. In addition, through interaction with cloud vendors, while understanding, identifying, and integrating new product or service innovations, they provide a basis for cooperation in developing new software-based services on the cloud platform.

This study also has some limitations, including the fact that in the interviews with experts, in addition to university professors, the opinions of senior technology managers of two institutions in Iran that implement cloud resources were taken. To confirm and expand on the findings of this study, more case studies are needed, as well as on a larger scale. Also, cloud computing technology and cloud sourcing solutions are developing rapidly, making our findings vulnerable to obsolescence. Therefore, new studies are needed to examine the developments of this phenomenon over time.

Reference

Anderson, J., Narus, J., and Van Rossum, W. (2006) 'Customer value proposition in the business markets', Harvard Business Review, Vol. 84, No. 3, pp.90–99.

Bakhshi, M., & Sami-Zadeh, R. (2017). A Model for Electronic Banking Adoption Considering the Role of Customer Trust. Smart Business Management Studies, 5(19), 53-74. https://doi.org/10.22054/ims.2017.7054

Barney J (1991) Firm resources and sustained competitive advantage. J Manag 17(1):99–120

Berman, S., Kesterson-Townes, L., Marshall, A., and Srivathsa, R. (Eds.) (2012) 'How cloud computing enables process and business model innovation', Strategy and Leadership, Vol. 40, No. 4, pp.27–35.

Bouncken RB, Gast J, Kraus S, Bogers M (2016) Competition: a systematic review, synthesis, and future research directions. RMS 9(3):577–601

Bouncken RB, Kraus S (2013) Innovation in knowledge-intensive industries: the double-edged sword of competition. J Bus Res 66(10):2060–2070

Bouncken, RB, Roig-Tierno N, Kraus S (2019) Knowledge- and innovation-based business models for future growth: digitalized business models and portfolio considerations. In: Review of Managerial Science (in print), https://doi.org/10.1007/s11846-019-00366-z

Chesbrough, H. (2006) Open Business Models: How to Thrive in the Innovation Landscape, Harvard Business Review, Boston, USA.

Clauß T, Bouncken RB, Laudien S, Kraus S (2019) Business model reconfiguration and innovation in SMEs: a mixed-method analysis from the electronics industry. Int J Innov Manag. https://doi.org/10.1142/S1363919620500152

Entezarian, N., & Mehrain, M. (2024). The Impact of Knowledge Management and Industry 4.0 Technologies in Organizations: A Meta-Synthesis Approach. Smart Business Management Studies, 12(48), 119-156. https://doi.org/10.22054/ims.2024.76308.2393

Floyd, C. (1997) Managing Technology for Corporate Success, Gower, Vermont, USA. Forrester (2012) The Era of the Extended Enterprise, Forrester Research Inc., Cambridge, USA.

Foss NJ, Saebi T (2017) Fifteen years of research on business model innovation: How far have we come, and where should we go? J Manag 43(1):200–227

Foss NJ, Saebi T (2018) Business models and business model innovation: between wicked and paradigm- Matic problems. Long Range Plan 51(1):9–21

Foster, R.N. (2012) 'Timing technology transitions', in Horwitch, M. (Ed.): Technology in the Modern Corporation: A Strategic Perspective, Pergamon Press.

Gabriel, E. (2006) 'Value chain for services', IMS International Journal, pp.1–30.

Giesen, E., Riddleberger, E., Christner, R., and Bell, R. (Eds.) (2010) 'When and how to innovate your business model', Strategy and Leadership, Vol. 38, No. 4, pp.17–26.

Holt, A., Weiss, K., Huberty, K., Gelblum, E., Flannery, S., Devgan, S., Malik, A., Rozof, N., Wood, A., Satndaert, P., Meunier, F., Lu, J., Chen, G., Lu, B., Han, K., Khare, V. and Miyachi, M. (2011) Cloud Computing Takes Off: Market Set to Boom as Migration Accelerates, pp.1–104, Morgan Stanley Blue Paper.

Kraus S, Palmer C, Kailer N, Kallinger FL, Spitzer J (2019) Digital entrepreneurship: a research agenda on new business models for the twenty-first century. Int J Entrep Behav Res 25(2):353–375

Krishnan, S. (Ed.) (2009) 'Cloud computing tomorrow's architecture. Saving money today, Siliconindia, Vol. 12, No. 8, pp.24–25.

Legner C, Eymann T, Hess T, Matt C, Böhmann T, Drews P, Ahlemann F (2017) Digitalization: opportunity and challenge for the business and information systems Mazaheri, M. S., Valmohammadi, C., Pourabrahimi, A., & Rabiei, M. (2023). A Comprehensive Framework for Selecting Cloud Service Providers (CSPs) Using a Meta-Synthesis Approach. *Smart Business Management Studies*, *11*(43), 217-256. https://doi.org/10.22054/IMS.2023.70398.2243

Mell P, Grance T (2011) National Institute of Standards and Technology, The NIST definition of cloud computing. NIST Spec Publ 53(6):50

Mohammadnejad-Chari, F., Bamdad-Sufi, J., Raeisi, I., & Amiri, M. (2023). Developing a Prototype for Data Marketplace Platform Business Models. Smart Business Management Studies, 11(44), 145-189. https://doi.org/10.22054/ims.2023.69482.2217

Rader, D. (2012) 'How cloud computing maximizes growth opportunities for a firm challenging established rivals', Strategy and Leadership, Vol. 40, No. 3, pp.36–43.

Ratten V. (2016) Continuance use intention of cloud computing: innovativeness and creativity perspectives. J Bus Res 69(5):1737–1740

Sabetrasekh, M., Salimi, M., & Rahimi, Q. (2023). A Model for Evaluating World-Class Information Systems Using a Balanced Scorecard Approach in Sports Organizations. Smart Business Management Studies, 12(45), 235-264. https://doi.org/10.22054/ims.2023.70395.2242

Samarghandi, H., Askarany, D., & Dehkordi, B. B. (2023). A hybrid method to predict human action actors in accounting information systems. Journal of Risk and Financial Management, 16(1), 37. https://doi.org/10.3390/jrfm16010037

Schneider S, Sunyaev A (2016) Determinant factors of cloud-sourcing decisions: reflecting on the IT outsourcing literature in the era of cloud computing. J INF Technol 31(1):1–31

Sheikhzadeh, M., Taghavi-Fard, M., Raeisi-Vanani, I., & Bamdad-Sufi, J. (2024). A Model for Online Donation Intention to Support Crowdfunding for Charitable Institutions in Iran. Smart Business Management Studies, 12(48), 1-31. https://doi.org/10.22054/ims.2024.77031.2413

Soleymanian, M., & Banitalebi Dehkordi, B. (2022). The role of digital innovation in financial markets from the perspective of knowledge and presentation of the proposed model. Advances in Finance and Investment, 4(1), 55-82.

Valmohammadi, C., & Mazaheri, M. S. (2017). Explaining the Factors Influencing the Decision to Use Cloud Computing Among IRIB Employees Based on the Technology Acceptance Model. Smart Business Management Studies, 5(19), 105-124. https://doi.org/10.22054/ims.2017.7056

Yalpanyan, M. A., Raeisi-Vanani, I., & Taghavi-Fard, M. (2024). Analyzing the Impact of Digital Transformation Technologies on Business Performance Using Advanced Text Analysis Methods. Smart Business Management Studies. https://doi.org/10.22054/ims.2024.77611.2421

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Examining the Impact of Board Structure on Stock Returns and Earnings Management: The Moderating Role of IT Governance in Tehran Stock Exchange Firms

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Abstract

Objectives: This study examines the impact of board structure on stock returns and earnings management, considering the moderating role of information technology (IT) governance in firms listed on the Tehran Stock Exchange. By exploring these relationships, the research aims to provide insights into how corporate governance mechanisms and IT governance influence financial performance and reporting quality.

Methodology/Design/Approach: The research is applied in nature and follows a correlational-descriptive methodology. The statistical population consists of firms listed on the Tehran Stock Exchange, with a research sample of 110 firms observed over eight years from 2015 to 2022. Multivariate regression analysis with panel data was conducted using Eviews software to test the research hypotheses.

Findings: The results indicate a significant relationship between board independence and stock returns, as well as between board size and stock returns. IT governance moderates these relationships, strengthening the positive effect of board independence on stock returns while intensifying the negative effect of board size on stock returns. Additionally, board independence has a significant positive effect on earnings management, whereas board size has a significant negative effect. IT governance also moderates the relationship between board structure and earnings management, influencing the extent to which board characteristics impact financial reporting practices.

Innovation: This research contributes to the literature by integrating IT governance into corporate governance studies, highlighting its moderating effect on the relationship between board structure, stock returns, and earnings management. The findings provide valuable implications for managers, investors, and regulators, emphasizing the importance of board composition and IT governance in evaluating corporate performance and making informed investment decisions.

Keywords: Board structure, IT governance, Profit management, Stock return.

1. Introduction

A firm is defined as a network of relationships established between the organization and its owners, as well as between the organization and a wide range of stakeholders, including employees, customers, vendors, and shareholders. This perspective is examined within the framework of stakeholder theory (Erkens, Hung, & Matose, 2012). Corporate governance benefits all financial stakeholders of the organization, including investors, creditors, board members, managers, and employees, as well as various industries and economic sectors associated with the organization (Chung & Isemoya, 2007). Corporate governance is of great importance as it enhances efficiency, fosters economic growth, and plays a key role in increasing investor confidence. This trust holds particular significance in a country's economy. Among government agencies, corporate governance has an even greater impact, as the beneficiaries of such organizations include all segments of society and the public. Therefore, identifying the factors influencing the quality of corporate governance is essential for establishing a strong and efficient structure in this field of study (Hassas Yeganeh, 2006).

The issue of corporate governance was officially introduced in Iran in 2004 and has since become a focal point for many organizations (Hassas Yeganeh & Salimi, 2011). In today's environment, the use of technology and information as tools for control and supervision significantly impacts organizational processes (Salim et al., 2021). The proper use and management of IT for transparency contribute to the establishment of democracy and good governance at the macro level of society. Government organizations, which form the core of the public sector, are affected by the effective and correct use of information technology. Additionally, government entities operating in the field of information technology maintain a direct relationship with ICT policies and tools due to the nature of their activities, implementation methods, and performance.

In previous studies, corporate governance has been examined from various perspectives, including research by Arkans, Hang, & Matose (2012), Tyne & Twaite (2011), and Babajani & Abdi (2010). However, this study specifically focuses on identifying and analyzing the relationship between the components of information technology governance and corporate governance in public organizations active in the IT sector.

Earnings management refers to the deliberate and purposeful manipulation of accounting results to alter the financial representation of an economic entity. It also encompasses conscious managerial actions, often intended to smooth periodic profit fluctuations (Octavia et al., 2022; Zhou, 2018). The use of an accrual basis results in accounting profit being recognized accordingly, typically leading to discrepancies between reported operating profit and net cash flows from operations, as well as certain accruals in the financial statements (Saghafi & Hashemi, 2004).

Given the above, the following research questions arise:

1) Does board independence have a significant effect on stock returns?
2) Does board size have a significant effect on stock returns, considering the moderating role of IT governance?
3) Does board independence have a significant effect on earnings management?
4) Does board size have a significant effect on earnings management?
5) Does board independence have a significant effect on earnings management, considering the moderating role of IT governance?
6) Does board size have a significant effect on earnings management, considering the moderating role of IT governance?

Therefore, this research aims to answer these questions and examine the relationship between corporate governance, IT governance, and business performance outcomes.

Theoretical Foundations and Research Background

- **IT Governance**

Information technology (IT) governance, through the effective use of data and technology, is recognized as a critical factor for achieving organizational success. Analyzing failures in IT innovations reveals that poor governance and the absence of appropriate role models among those responsible for managing risks contribute to detrimental outcomes, preventing organizations from fully realizing the benefits and value of IT investments (Mionsi & Randi, 2013).

Service management studies indicate that large organizations allocate approximately fifty percent of their core investments—specifically, expenditures related to fixed asset purchases—to the field of information technology (Simonsen & Johnson, 2008). IT governance is a fundamental responsibility of managers and board members, encompassing the leadership of organizational structures and processes to ensure that IT strategies align with the firm's objectives and contribute to its development. Unlike IT management, which focuses on specific operational decisions, IT governance primarily establishes clear accountability by defining who makes decisions, how decisions are made, and who is responsible for their execution.

Financial crises in global stock markets, particularly the Black September event in 1997 and subsequent financial scandals involving several American and European corporations in 2000, brought corporate governance into sharp focus concerning financial performance. A decline in public trust in capital markets compelled many countries to revise and enact laws that would restore investor confidence in market cycles and the financial information provided by organizations (Jamei & Lotfi, 2022).

Weak corporate governance can result in information concealment, deficiencies in oversight and control, and ineffective dissemination of information—factors that may ultimately lead to organizational failure and bankruptcy. Corporate governance determines the framework through which an organization's goals are formulated, as well as the mechanisms for achieving these goals and monitoring performance. In essence, corporate governance consists of a set of laws, regulations, structures, processes, cultures, and systems designed to ensure accountability, transparency, fairness, and respect for stakeholder rights (Hassas Yeganeh & Baghomian, 2006).

- **Board Structure**

The board of directors is a group of elected individuals whose primary responsibility is to act in the best interests of shareholders. Board members formally oversee and regulate the performance of senior managers, with supervision and control being their most crucial duties. Given this oversight role, the board of directors serves as a key mechanism for reducing agency costs, thereby directly influencing various aspects of the firm's performance (Alderson, Ding, & Tang, 2021).

- **Stock Returns**

Stock returns are one of the key factors influencing investment decisions. The higher the return, the more attractive the investment becomes (Saeedi & Ebrahimi, 2010). Since investment is a fundamental driver of economic growth and national development, it is crucial to consider components such as risk and return. These two factors serve as primary criteria in analyzing and evaluating various types of investments. However, accurately predicting investment returns is inherently uncertain.

The stock market, as one of the most significant financial markets, plays a vital role in reflecting the economic conditions of a country (Hajibegloo & Mousaseni, 2022). Given its importance, forecasting stock prices or returns has been a central topic in financial literature, as it holds particular significance for investors, risk management professionals, and monetary policymakers (Al-Qahtani, Buri & Wu, 2020).

Broadly, four main approaches are used for stock price forecasting: technical analysis, fundamental analysis, classical time series forecasting, and machine learning methods (Rostami & Nezamuddin Makian, 2022).

Stock returns encompass all benefits derived from holding stocks, including capital gains. As a result, capital market investors seek to allocate their savings to investments that offer the highest returns. To achieve this objective, they rely on information that enables them to predict investment returns effectively.

- **Profit Management**

Earnings management refers to the deliberate actions taken by management to stabilize reported profits. In this process, managers aim to achieve a level of earnings that is both desirable and acceptable. More specifically, they attempt to smooth out abnormal profit fluctuations within the framework of generally accepted accounting principles and ethical management practices. This process may involve prioritizing or delaying the recognition of expenses and revenues, reallocating certain costs, or deferring them to future financial periods. The objective is to present a stable and consistent earnings trend over multiple reporting periods, thereby fostering a favorable and dynamic perception of the firm among investors and the capital market (Akbas & Kanikli, 2018).

Fallah, Molaei, and Zabihzadeh (2023) examined the factors influencing real earnings management in firms listed on the Tehran Stock Exchange. Their findings indicate that changes in firm performance and expectations of future earnings growth are directly associated with real earnings management. However, no significant relationship was found between real earnings management and factors such as firm size and ownership structure.

Ebrahimi et al. (2021) conducted a study using Bayesian models to identify the key factors affecting real and accrual-based earnings management in the capital market. Their results suggest that earnings management in Iranian-listed firms is a multidimensional phenomenon, with profitability, liquidity, and debt-related variables playing a major role. The complexity of these factors underscores the need for coordinated policymaking in financial and capital markets to mitigate and regulate earnings management practices in the stock exchange.

In 2023, Singh and Al-Holil investigated the impact of IT governance and board structure on firm performance and earnings management in firms listed on the Tehran Stock Exchange. Their findings indicate that among the three performance metrics—return on assets (ROA), return on equity (ROE), and Tobin's Q—only operational return on assets exhibits a positive and significant relationship with IT governance at the board level. This suggests that a higher proportion of board members with IT expertise, the presence of a Chief Information Officer (CIO) or Chief Technology Officer (CTO) on the board, and the establishment of an IT committee contribute positively to a firm's operational performance.

Main Hypothesis

"The structure of the board of directors significantly influences stock returns and earnings management, with IT governance playing a moderating role."

Research Sub-Hypotheses

- **H1:** Board independence significantly affects stock returns.
- **H2:** The size of the board of directors significantly affects stock returns.
- **H3:** Board independence significantly affects stock returns, with IT governance as a moderating factor.
- **H4:** The size of the board of directors significantly affects stock returns, with IT governance as a moderating factor.
- **H5:** Board independence significantly affects earnings management.
- **H6:** The size of the board of directors significantly affects earnings management.
- **H7:** Board independence significantly affects earnings management, considering the moderating role of IT governance.
- **H8:** The size of the board of directors significantly affects earnings management, considering the moderating role of IT governance.

Research Methodology

The present study is applied in terms of its nature. In this study, the method of determining the correlation coefficient has been used, and the method of using the information is retrospective. Correlation research includes all studies in which the relationship between different variables is determined by using the correlation coefficient. The regression model used in this study has been selected from the type of multivariate linear regression. The data of this study have been examined simultaneously across periods and time series, and the research data are of a mixed type.

Since this research seeks to find a meaningful relationship between variables, it falls under descriptive and correlational research in terms of purpose. Additionally, from another perspective, this study is considered a descriptive post-event study because the data and information used were collected after the occurrence of events related to the research topic. In other words, it is based on the analysis of past information, such as the financial statements of firms. Furthermore, due to the applicability of its results in practical processes, this research is classified as applied research in terms of its nature and has a hybrid nature in terms of data type.

To collect and write the theoretical foundations section, a variety of sources such as domestic and international specialized journals have been used. Additionally, to collect other necessary data and information, financial and non-financial reports and statements published by firms listed on the Tehran Stock Exchange and the information available on the Codal website have been utilized. Descriptive and inferential statistics are used to statistically analyze the data and examine the research hypotheses. In the descriptive statistics section, indices such as the mean, median, minimum and maximum values, standard deviation, skewness, and kurtosis related to each variable are presented. Inferential statistics include the Limor F test and Hausman test (to determine and select the type of model), as well as the error component normality test, variance homogeneity test, autocorrelation test, reliability test, and finally, regression model estimation.

Research Regression Model

Model 1)

$$RET_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 BSIZE_{it} + \beta_3 ITG_{it} + \beta_4 BIND_{it} * ITG_{it} + \beta_5 BSIZE_{it} * ITG_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 ROA_{it} + \beta_9 AGE_{it} + \varepsilon_{it}$$

Model 2)

$$ACC_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 BSIZE_{it} + \beta_3 ITG_{it} + \beta_4 BIND_{it} * ITG_{it} + \beta_5 BSIZE_{it} * ITG_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 ROA_{it} + \beta_9 AGE_{it} + \varepsilon_{it}$$

Operational Definitions of Variables

Independent Variable: Information Technology Governance (ITG)

The indicators of Information Technology Governance (ITG) have been developed based on the framework of the Kubit standard. In a study, Hassas Yeganeh and Salimi (2011) ranked the indicators of IT governance in Iran. Therefore, in this study, the ranked indicators from their research have been used.

1) Planning and Organizing
2) This field involves a set of strategies and tactics aimed at utilizing information technology to advance business goals. To achieve this, a comprehensive program must be designed, where roles and activities are assigned to individuals in alignment with specific goals.
3) Acquisition and Implementation
4) To operationalize strategies, it is essential to identify, develop, and implement appropriate solutions. In this process, the integration between existing systems and software with new solutions must be carefully examined and analyzed.
5) Delivery & Support
6) This area includes activities such as training personnel, installing systems, and all day-to-day actions taken to maintain systems and address errors or issues.
7) Monitoring and Inspection
8) Information technology systems require periodic evaluations and reviews to ensure proper performance. This field encompasses processes aimed at monitoring and evaluating the organization's information systems and infrastructure. If managers have invested in information technology, the value of 1 will be assigned; otherwise, the value of 0 will be assigned (Singh & Al-Holil, 2023).

Board Structure

To measure the structure of the board, the following two indicators are used:

1) Independence of the Board of Directors (BIND): The ratio of non-executive members to the total number of board members.
2) Board Size (BSIZE): Refers to the total number of members on the board of directors.

Dependent Variable: Stock Return ($R_{i,t}$)

Return can be defined as the change in the value of an asset over a given period. In the case of stocks, this definition includes both the changes in the stock price and the dividends or benefits paid. The total return on stocks refers to the combined benefits accrued by the stock during the year. The stock price at the end of the fiscal year is compared to the stock price at the beginning of the fiscal year, along with any other paid benefits from the stock.

The return on stocks, denoted as $R_{i,t}$ for Firm I in year t, is calculated using the following relationship (Marefati, Soheil Beigi & Mokhtarati Tarani, 2022):

$$R_{i.t} = \frac{(p_{i.t} - p_{i.t-1}) + d_{i.t}}{p_{i.t-1}}$$

Where:

- $P_{i,t}$ = Stock price of firm i at the end of year t
- $P_{i,t-1}$ = Stock price of firm i at the beginning of year t
- $D_{i,t}$ = Dividends or benefits paid by firm i in year t

Earnings Management (ACC)

The proposed model for predicting hypotheses in the field of earnings management includes three main variables and several control variables, which have been identified as effective and determinant factors of earnings management in previous research. In this study, earnings management will be measured using the Kothari model. Kothari et al. developed a model similar to the modified Jones model, but it also incorporates the rate of return on assets. We will use the residuals of the model, also referred to as the model's "waste," to measure earnings management.

$$TA_{i,t}/A_{i,t-1} = \alpha 1(1/A_{i,t-1}) + \alpha 2(\Delta REV_{i,t}/A_{i,t-1}) + \alpha 3(PPE_{it}/A_{i,t-1}) + \alpha 4 ROA_{i,t-1} + \boldsymbol{\varepsilon_{i,t}}$$

Control Variables:

- SIZE: The natural logarithm of total assets is used as a measure of the firm's size.
- ROA (Return on Assets): The return on assets is calculated by dividing net profit by total assets.
- AGE: The natural logarithm of the difference between the year of establishment and the year in question is used to measure the firm's age.
- LEV (Leverage): The ratio of total liabilities to total assets is used as a measure of leverage.

Research Findings

In this study, descriptive statistics related to the variables of the regression model are first presented. For this purpose, descriptive indices, including central tendency measures (such as mean and median), dispersion measures (such as variance and standard deviation), and indices related to the distribution shape (such as skewness and kurtosis), are calculated for each of the research variables. These statistics provide an overview of the characteristics of each variable in the model. The descriptive statistics of the research variables, derived from data for 110 firms active in the Tehran Stock Exchange during the period from 2015 to 2022, include the number of observations, mean, standard deviation, minimum, maximum, skewness coefficient, and kurtosis coefficient, which are presented in Table (1).

Table 1. Descriptive statistics of research variables

S. dev.	Max	Min	Mean	Variable
RET	1.0213	15.4313	-0.8193	1.8618
Acc	0.0016	0.8029	-0.6841	0.1692
BIND	0.6547	1.0000	0.0000	0.1962
BSIZE	5.0432	7.0000	5.0000	0.3206
ITG	0.2295	1.0000	0.0000	0.4208
LEV	0.5296	1.5053	0.0139	0.2239
SIZE	15.3893	21.5717	11.6388	1.7145
ROA	0.1904	0.9171	-0.3298	0.1582
AGE	3.2065	4.1589	2.1972	0.4215
Bivalent Variables				
ITG	1	202	0/23 %	
	0	678	0/77 %	

In Table (1), several concepts related to the descriptive statistics of variables, including mean, median, minimum and maximum values, standard deviation, skewness, and kurtosis, are presented. Among these, the central parameters, as part of the descriptive measures, represent the characteristics of the data in relation to the center of distribution. The mean, which

is known as the equilibrium point and the center of gravity of a statistical distribution, is considered one of the most appropriate indicators for displaying the centrality of data. In Table (1), the number of observations related to the studied firms is 880 (110 firms over 8 years).

The results of the durability test for the combined data presented in Table (2) indicate that all the variables studied are stable.

Table 2. Results of the Durability Test for the Variables of the Models

Variable	Test Statistics	Sig	Results
RET	-20.922	0.0000	Stationary
Acc	-16.153	0.0000	Stationary
BIND	-20.609	0.0000	Stationary
BSIZE	-10.611	0.0000	Stationary
ITG	-6.296	0.0000	Stationary
LEV	-7.676	0.0000	Stationary
SIZE	-12.022	0.0000	Stationary
ROA	-10.160	0.0000	Stationary
AGE	-11.617	0.0000	Stationary

Table 3. The results of the test of the absence of collinearity between explanatory sentences

Variable	Variance Inflation Factor
BIND	1.343314
BSIZE	1.240844
ITG	3.048316
BIND* ITG	1.335761
BSIZE* ITG	3.071489
LEV	1.246199
SIZE	1.086312
ROA	1.240023
AGE	1.056752

Table 4. Correlation between the variables of the research model

Probability	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RET	1.0000								
Possibility	-----								
Acc	0.0086-	1.0000							
Possibility	0.7995	-----							
ITG	0.1219-	0.0335-	1.0000						
Possibility	0.0003	0.3216	-----						
BIND	0.0088-	0.0074	0.0295	1.0000					
Possibility	0.7938	0.8261	0.3816	-----					
BSIZE	0.0130	0.0182	0.0398-	0.1133	1.0000				
Possibility	0.7006	0.5898	0.2379	0.0008	-----				
LEV	0.0025-	0.0583-	0.0548-	0.1623-	0.0176-	1.0000			
Possibility	0.9406	0.0841	0.1040	0.0000	0.6018	-----			
SIZE	0.0516-	0.1128	0.1535	0.0351-	0.0607	-0.0665	1.0000		

Probability	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Possibility	0.1258	0.0008	0.0000	0.2985	0.0718	0.0488	-----		
ROA	0.1950	0.1477-	0.0267-	0.0829	0.0056-	0.3992-	0.1886	1.0000	
Possibility	0.0000	0.0000	0.4287	0.0139	0.8691	0.0000	0.0000	-----	
AGE	0.0352	0.0069	0.1070	0.1002-	0.0785-	0.1206-	0.0648-	0.0406	1.0000
Possibility	0.2976	0.8376	0.0015	0.0029	0.0198	0.0003	0.0545	0.2293	-----

Table 5: Results of the Limmer F test for the first and second models

Exam Statistics	Degree of Freedom	P value	Results
0.735	(109،761)	0.879	Using Consolidated Data
0.721	(109،761)	0.389	Using Consolidated Data

The first model of the research

According to the regression coefficient for board independence, it can be concluded that board independence has a significant relationship with the stock returns of firms listed on the Tehran Stock Exchange (p > 0.05). Similarly, based on the regression coefficient for board size, it can be concluded that the size of the board of directors has a significant relationship with the return on equity for firms listed on the Tehran Stock Exchange (p > 0.05). Additionally, the regression coefficient for information technology governance shows a significant relationship between IT governance and stock returns for firms listed on the Tehran Stock Exchange (p > 0.05).

The results in Table (6) reveal that the coefficient of board independence on stock returns is significant for the firms under study (p > 0.05). Likewise, the coefficient for board size on stock returns is significant for these firms (p > 0.05). The results further indicate that at the 95% confidence level, the t-values for all variables, except for firm age and financial leverage, lie within the rejection zone of the null hypothesis, indicating that these variables are significant in the model.

Moreover, the findings for the control variables show that return on assets has a positive and significant effect on stock returns. In contrast, the size of the firm exhibits a negative and significant effect on stock returns.

Table 6. Results of Partial Coefficients (First Model)

$RET_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 BSIZE_{it} + \beta_3 ITG_{it} + \beta_4 BIND_{it} * ITG_{it} + \beta_5 BSIZE_{it} * ITG_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 ROA_{it} + \beta_9 AGE_{it} + \varepsilon_{it}$

Variables	Coef	T statistic	Sig	Results
C	1.9867	2.0681	0.0390	Confirm
BIND	-0.139	-3.838	0.000	Confirm
BSIZE	-0.097	3.132	0.001	Confirm
ITG	0.368	3.265	001/0	Confirm
BIND* ITG	-0.124	3.757	0.000	Confirm
BSIZE* ITG	-0.1261	-0.4221	0.6731	Confirm
LEV	0.3943	1.6404	0.1014	Disapproval
SIZE	-0.0605	-2.2761	0.0232	Confirm
ROA	1.5278	4.4369	0.0000	Confirm
AGE	0.0604	0.5246	0.6000	Disapproval
R-squared		Coefficient of Determination		0.195
Adjusted R-squared		Adjusted coefficient of determination		0.479
F-statistic		Statistic F		15.351
Prob(F-statistic)		Significance level		0.0000
Durbin-Watson stat		Watson Durbin		2.444

The results indicate that at the 95% confidence level, the t-values for all variables except for firm age and financial leverage, fall within the rejection zone of the null hypothesis, implying that these variables are significant in the model. Furthermore, the findings for the control variables show that return on assets has a positive and significant effect on stock returns. Conversely, firm size exhibits a negative and significant effect on stock returns.

The second model of the research

Based on the value of the regression coefficient for board independence, it can be concluded that there is no significant relationship between board independence and earnings management in firms listed on the Tehran Stock Exchange. As a result, the fifth hypothesis is rejected. On the other hand, the negative value of the regression coefficient for board size suggests that the size of the board of directors has a significant negative relationship with earnings management in these firms, thereby confirming the sixth hypothesis. Furthermore, the negative value of the regression coefficient for information technology governance indicates a negative (inverse) relationship between IT governance and earnings management in firms listed on the Tehran Stock Exchange. The results presented in Table (7) show that the coefficient for board independence on earnings management is significant for the firms under study, considering the moderating role of IT governance ($p > 0.05$). Similarly, the coefficient for board size on earnings management is also significant for the firms under study ($p > 0.05$).

The results indicate that at the 95% confidence level, the t-values, except for the age of the firm, fall within the rejection zone of the null hypothesis, meaning that the variables are significant in the model. The results for the control variables reveal that both return on assets and firm size have a positive and significant effect on earnings management. Additionally, the findings show that financial leverage has a negative and significant effect on earnings management.

Table 7. Results of Partial Coefficients (Second Model)

$ACC_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 BSIZE_{it} + \beta_3 ITG_{it} + \beta_4 BIND_{it} * ITG_{it} + \beta_5 BSIZE_{it} * ITG_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 ROA_{it} + \beta_9 AGE_{it} + \varepsilon_{it}$

Variables	Coef	T statistic	Sig	Results
C	-0.407	3.002	0.002	Confirm
BIND	0.133	3.526	0.000	Confirm
BSIZE	-0.0594	-7.3486	0.0000	Confirm
ITG	-0.1558	-1.9805	0.0483	Confirm
BIND* ITG	-0.101	-3.004	0.002	Confirm
BSIZE* ITG	0.124	3.719	0.000	Confirm
LEV	-0.0879	-4.4673	0.0000	Confirm
SIZE	0.0125	5.6328	0.0000	Confirm
ROA	0.2116	7.0628	0.0000	Confirm
AGE	0.0033	0.3968	0.6916	Disapproval
R-squared	Coefficient of Determination		0.674	
Adjusted R-squared	Adjusted coefficient of determination		0.565	
F-statistic	Statistic F		7.770	
Prob(F-statistic)	Significance level		0.0000	
Durbin-Watson stat	Watson Durbin		2.103	

Discussion and Conclusion

This study aimed to provide a comprehensive understanding of the key variables and investigate the effect of information technology governance and board structure on stock returns and earnings management in firms listed on the Tehran Stock Exchange. The findings of this research have the potential to be widely applied in decision-making processes and

contribute to advancing scientific perspectives on these fundamental variables.

The results show that board structure, considering the moderating role of IT governance, significantly impacts stock returns and earnings management. A key aspect of this research is the emphasis on information technology governance, which includes policies, processes, and structures for the efficient management and control of IT within organizations. The findings highlight that board size plays a critical role in the quality of board oversight, especially in monitoring earnings management (Chowdari, 2021; Khan, 2022). According to agency theory, as proposed by Jensen (1993), an increase in the number of managers often leads to communication and coordination issues, which in turn reduce efficiency and cohesion among board members, resulting in delays in decision-making (Yermack, 1996). Furthermore, a larger board size is associated with higher agency costs and myopia. Agency theory suggests that greater board independence improves governance, as independent external directors can better represent shareholders' interests, resolving conflicts between shareholders and internal firm members (Kato & Long, 2006; Rahman et al., 2021).

Based on the findings, several recommendations are proposed, including the alignment of IT strategies with the firm's macro strategies to help achieve business and financial objectives. Additionally, improving the firm's IT processes is recommended to enhance information quality, efficiency, and security, while also fostering better internal and external communications.

One limitation of this research is its quasi-experimental nature, as certain factors affecting the results, such as economic conditions, political factors, and the global economic situation, could not be controlled. These factors may influence the findings of the study. Additionally, excluding firms in the financial, insurance, and banking industries may limit the generalizability of the results. Given that this study was conducted between 2015 and 2022 with data from firms listed on the Tehran Stock Exchange, the findings should be interpreted with caution when applied to other time periods or firms not active on the exchange.

Reference

Akbaş, H. E., & Canikli, S. (2018). Determinants of voluntary greenhouse gas emission disclosure: An empirical investigation on Turkish firms. Sustainability, 11(1), 107.

Alqahtani, A., Bouri, E., & Vo, X. V. (2020). Predictability of GCC stock returns: The role of geopolitical risk and crude oil returns. Economic Analysis and Policy, 68, 239-249.

Babajani, J., & Abdi, M. (2010). The relationship between corporate governance and enterprises' taxable profit. Financial Accounting Research Journal, 2(3), 65-86. (in Persian)

Bills, K. L., Huang, H. W., Lin, Y. H., & Wood, D. A. (2020). Chief audit executive turnover: Market reactions, financial reporting quality, and audit risk assessment. Financial Reporting Quality and Audit Risk Assessment, (August 3, 2020).

Chong, G., & Isimoya, E. (2007). Disclosure of governance information by small and medium-sized firms. Corporate Governance: The International Journal of Business in Society, 7(5), 635-648.

Ebrahimi, M., & Saeedi, A. (2010). The effects of accounting variables and firm's characteristics on stock prices of firms listed in TSE. Accounting and Auditing Review, 17(4), 1-16. (in Persian)

Ebrahimi, M., Hanifi, H., Shahvardiani, S., & Kordloui. (2021). Identifying the most important factors affecting the management of real and accrual profit in the capital market with the approach of Bayesian models. Financial Engineering and Securities Management, 48(12), 109-142.

Erkens, D. H., Hung, M., & Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. Journal of Corporate Finance, 18(2), 389-411.

Fallah, S., Moulai, M., & Zabihzadeh, A. (2023). Evaluation of the basic factors affecting real profit management in firms listed on the Tehran Stock Exchange. Scientific Journal of New Research Approaches in Management and Accounting, 7(25), 688-707. (in Persian)

Haji Beglu, H., & Masisi, M. (2022). The effect of labor investment efficiency on stock returns during the period of the Covid-19 crisis. Scientific Journal of New Research Approaches in Management and Accounting, 6(23), 505-524. (in Persian)

Hassas Yeganeh, Y., & Baghomian, R. (2015). The role of the board of directors in corporate governance. Accountant Magazine, 173, 20-35. (in Persian)

Hassas Yeganeh, Y. (2006). Corporate governance in Iran. Hesabres, 9(39), 32-32. (in Persian)

Hassas Yeganeh, Y., & Salimi. (2010). A model for ranking corporate governance in Iran. Financial Accounting Empirical Studies, 8(30), 1-35. (in Persian)

Jamei, Lotfi, & Arzoo. (2022). Accounting information system and corporate governance. Accounting and Auditing Studies, 11(41), 5-22. (in Persian)

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. Journal of Accounting and Economics, 39(1), 163-197.

Marefati, Y., Sohail Beigi, M., & Marefati Tarani, H. (2022). ESG sustainability factors and stock returns with emphasis on the Corona pandemic. Shabak, 8(4), 67-76. (in Persian)

Munisi, G., & Randøy, T. (2013). Corporate governance and firm performance across Sub-Saharan African countries. Journal of Economics and Business, 70, 92-110.

Octavia, A. M., Ermaya, H. N. L., & Darmastuti, D. (2022). Pengaruh Audit Quality dan Independensi Auditor Terhadap Manajemen Laba Riil Melalui Financial Distress. Jurnal Ekonomi dan Bisnis, 25(1), 92-109. DOI:10.31941/jebi.v25i1.2012

Rostami, M., & Makian, S. N. (2022). Prediction of stock returns of Tehran Stock Exchange: Comparison of Bayesian approaches, exponential smoothing, and Box-Jenkins. Iran Economic Research, 27(91), 189-221. (in Persian)

Saeedi, A., & Ramsheh, M. (2011). The systematic risk determinants in Tehran Stock Exchange. Financial Accounting Research, 3(1), 125-142. (in Persian)

Saghafi, D. A., & Hashemi, S. A. (2004). Analytical investigation of the relationship between operating cash flows and accruals. Presenting a model for predicting operating cash flows. Accounting and Auditing Reviews, 11(4). (in Persian)

Simonsson, M., & Johnson, P. (2006, April). Assessment of IT governance prioritization of Cobit. In Proceedings of the Conference on Systems Engineering Research (pp. 1-10).

Slim, A., Sarah, O., Kadhim, K., Ali, B., Hammood, A., & Othman, B. (2021). The effect of information technology business alignment factors on the performance of SMEs. Management Science Letters, 11(3), 833-842.

Singh, H. P., & Alhulail, H. N. (2023). Information technology governance and corporate boards' relationship with companies' performance and earnings management: A longitudinal approach. Sustainability, 15(8), 6492.

Tian, G. Y., & Twite, G. (2011). Corporate governance, external market discipline, and firm productivity. Journal of Corporate Finance, 17(3), 403-417.

Zhou, Z., Zhou, H., Peng, D., Chen, X. H., & Li, S. H. (2018). Carbon disclosure, financial transparency, and agency cost: Evidence from Chinese manufacturing listed companies. Emerging Markets Finance and Trade, 54(12), 2669-2686.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. Journal of Financial Economics, 40(2), 185-211.

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The Impact of Cost Stickiness and Product Market Competition on Firms' Competitive Business Strategies

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Abstract

Objectives: This study examines the impact of cost stickiness and product market competition on firms' competitive business strategies. By analyzing these relationships, the research aims to provide insights into how market dynamics and cost behavior influence strategic decision-making.

Methodology/Design/Approach: The study is applied in nature and follows a causal-correlational methodology. The statistical population consists of firms listed on the Tehran Stock Exchange, from which 130 firms were selected using the systematic elimination sampling method. The research covers eight years from 2016 to 2023. The hypotheses were tested using three statistical models to assess the relationships between cost stickiness, market competition, and business strategy.

Findings: The results indicate an inverse relationship between product market competition and competitive business strategy, suggesting that firms in highly competitive industries tend to adopt defensive strategies. However, no significant relationship was found between cost stickiness and competitive business strategy. Additionally, the interaction between cost stickiness and product market competition does not significantly influence firms' strategic choices.

Innovation: This study contributes to the literature by exploring the interplay between cost behavior, market competition, and strategic decision-making in emerging markets. The findings offer valuable implications for managers and policymakers in shaping business strategies based on market conditions and cost structures.

Keywords: Business Strategy, Product Market Competition, Cost Stickiness.

1. Introduction

In general terms, strategy refers to a plan or a vision for future goals that an entity formulates and pursues to achieve its objectives. However, in management science, strategy formulation is considered one of the most important tasks of management, forming the basis for crucial decisions aimed at ensuring the organization's survival and excellence (Bahrami & Izadinia, 2020). In today's business environment, many organizations, rather than adopting a single unified strategy, employ a range of strategy-related tools, each designed at different organizational levels. These strategies not only respond to environmental conditions but also align with the strategies of other levels within the firm, the competitive strengths and competencies of the business unit, and the firm as a whole. Each level of strategy interacts closely with the others, and for an organization to succeed, these levels must be integrated (Izadi, 2013).

Business strategy, typically executed at the level of strategic products or business units, aims to enhance the competitive position of a firm's products and services in a specific industry or market segment. Two of the most common frameworks for business strategies are: (1) the Miles and Snow typology, which focuses on the rate of product-market change, and (2) Porter's typology, which focuses on customers and competitors. The success and value increase of a firm depends on the choice of an appropriate strategy by its managers. Choosing the wrong strategy can result in irreparable damage to the firm and its stakeholders.

Several factors can influence the selection of a firm's strategy, and no firm can rely solely on a single strategy throughout its entire lifecycle. The strategy should be adapted based on the market and competitive conditions, available resources, and budget. One key factor influencing strategy selection is market competition intensity. Depending on market concentration, product type, and market share, a carefully crafted strategy should be adopted. Additionally, firms need to consider their cost structure in relation to sales and market share. If costs cannot cover sales, or if there is cost stickiness, it can create significant challenges for the firm. Therefore, understanding the complex relationships between these variables highlights the importance of addressing the research topic, thus creating a compelling research gap.

In the following sections of this study, the theoretical foundations, hypotheses, and empirical background of the research will be presented. This will be followed by a discussion on the methodology, operational definitions of the research variables, and finally, the presentation of the research findings and conclusions.

Theoretical intermediate and development of the research hypothesis

In general terms, strategy refers to a plan and vision for the future goals of an entity within the market it operates, which the organization formulates and follows to achieve its objectives. In management science, however, strategy formulation is considered one of the most critical tasks of management. It serves as the foundation for vital decisions that ensure the survival and excellence of an organization. Today, most organizations use a set of related strategies, each designed at different organizational levels, rather than adopting a single, comprehensive strategy. In large, multi-product organizations, these levels typically include: 1) Organizational Strategy, 2) Business Strategy, and 3) Functional (Task) Strategy. It is important to note that in smaller organizations, the first two levels may be merged, creating a simplified approach (Akbari et al., 2019). Each strategy, in addition to addressing environmental conditions, aligns with the other strategies at the firm level, as well as the strengths and weaknesses of the business unit. The strategies at different levels are closely interlinked, and for an organization to succeed, these levels must be integrated and coordinated effectively.

Business strategy is typically executed at the level of strategic products or business units, with a primary focus on improving the competitive position of the firm's goods and services within a specific industry or market segment. To mitigate the negative effects of the

external environment and maximize the potential benefits of opportunities, organizations typically employ one of four types of adaptive strategies: defenders, aggressors, pioneers, and forwarders (Tanani & Mohebkhah, 2014). Defenders (defensive strategy) and aggressors (offensive strategy) represent two extremes on the spectrum of possible strategies, and competition closely ties the choice of strategy in the market. The type of competitors within the market largely determines the managers' strategic decisions to ensure the firm does not fall behind its rivals.

Competitiveness is defined as the ability of firms to survive in the market, protect their assets, generate returns for stakeholders, and ensure future job security (Khodadadi et al., 2014). This definition emphasizes the impact of competition on firms' actions. One key metric for assessing the competitive landscape of an industry is market concentration. Market concentration refers to how product markets are distributed among various firms in the industry, indicating how much of the market's total output is controlled by a few firms. The fewer the firms in the industry, the more concentrated it becomes. For example, in major industries like petrochemicals, steel, automotive, financial intermediation, and investment, a few large firms dominate the market. These firms often report higher sales revenues compared to their smaller counterparts, owing to their market dominance (Kheirkhah et al., 2019).

According to Porter (1990), competition in product markets affects management decisions and is a crucial determinant of a firm's profitability. Competitive conditions quickly drive inefficient managers out of the market, making market competition an external mechanism for corporate governance that supervises management and reduces agency costs (Demouri & Izadi, 2019). Competitiveness is also described as the firm's economic ability to maintain or increase its market share, with sales figures being a key indicator of the firm's market influence. Thus, one of the primary aims of this study is to investigate whether competition in the product market influences the choice of competitive strategy adopted by firms.

Cost behavior refers to the way costs respond to changes in the level of activity, with a proportional relationship existing between changes in costs and activity levels. Cost stickiness occurs when costs increase as sales rise but do not decrease to the same extent when sales decline (Vaghfi et al., 2019). Understanding how costs behave in response to changes in sales and activity levels is crucial for managerial decision-making. Traditional cost behavior models suggest that variable costs are directly related to changes in activity volume and sales (Namazi, 2018). However, cost stickiness is a distinctive feature, where cost reductions are less responsive than cost increases in response to fluctuating activity levels. Modern models of asymmetric cost behavior suggest that managers adjust resources based on changing demand levels to maximize sales and achieve higher profitability. This dynamic behavior continues in response to fluctuations in demand (Hashemi & Nejati, 2016; Anderson et al., 2007). Given the fierce competition in both domestic and global markets, cost management is viewed as a competitive advantage that enhances performance. Anderson (2003) defines cost stickiness as a behavior pattern reflecting changes in costs relative to sales fluctuations, with efficient managerial decisions determining whether to adjust resources during periods of declining sales (Deldar, 2016).

Based on the above theoretical considerations, the following hypotheses have been proposed for the present study:

- **H1:** Competition in the product market has a significant effect on the chosen business strategy of firms.
- **H2:** Cost stickiness has a significant effect on the business strategy of firms.
- **H3:** Cost stickiness intensifies the significant effect of competition in the product market on the chosen strategy of firms.

Research Background

Felicia et al. (2022), in a study titled *Business Strategy and Competition in Industries*, stated that the purpose of this research is to investigate whether an appropriate business strategy can improve the performance of the firm by using industrial competition as its moderating variable. This study uses the typology of the business strategy of Miles and Snow (1978). The research targets listed manufacturing firms on the Indonesian stock exchange during the years 2011-2016, as they have complete trading processes that better describe the implementation of business strategies. Research in emerging markets, such as Indonesia, provides a comprehensive picture of the impact of business strategy on business performance. The results show that aggressive firms have better financial performance than defenders and maintain this advantage for up to two years after the strategy is implemented. The study also indicates that innovative firms perform better than defenders, especially in highly competitive industries. This conclusion is important for managers in adopting an appropriate business strategy in a competitive environment.

Li and Lu (2021), in a study titled *Product Market Competition and Cost Stickiness: Evidence from China*, stated that product market competition affects resource allocation decisions and management cost adjustments, ultimately influencing cost stickiness. This paper uses semi-natural experiments and examples from the Chinese capital market to analyze and test these instruments. The conclusions are as follows: (1) in emerging markets, competition in the product market reduces the stickiness of costs; (2) for firms with a defensive strategy, the impact of product market competition on cost stickiness is not significantly diminished; (3) for publicly owned enterprises, the impact of product market competition on cost stickiness is significantly weakened. Additionally, the financial strength and competitive position of the industry reduce the impact of product market competition on cost stickiness.

Chen and Ma (2021), in a study titled *Financial Constraints, Internal Control, and Cost Stickiness*, stated that managers often find resource retention more effective than restructuring resources afterward. However, financing constraints have created uncertainty in resource decisions. The research sample includes data from manufacturing firms in China from 2009 to 2017. The findings show that financial constraints significantly affect the cost stickiness of firms. Additionally, low internal control quality intensifies the relationship between financial constraints and cost stickiness.

Habib and Costa (2021), in a study examining the relationship between debt maturity structure and cost stickiness, showed that despite a decrease in activity levels, managers deliberately continue to expand resources for personal gain. They investigated whether short-term debt limits this opportunistic cost behavior and found evidence supporting this hypothesis. The study also concluded that the availability of free cash flows, revenue management incentives, and an executive compensation structure impact cost stickiness, which is mitigated by short-term debt due to the shorter maturity of resources.

Li et al. (2020), in a study titled *Risk Management and Cost Asymmetry: Evidence from China*, stated that preferential risk management has a significant impact on cost management decisions, indicating that cost behavior is influenced by managers' risk preferences. The study concludes that cost stickiness increases with managers' risk tolerance, especially in firms with lower managerial oversight. Moreover, the moderating effect of managerial preferences is more pronounced in less competitive industries and regions with lower marketing intensity.

Habib and Hassan (2017) investigated business strategy, overvalued stocks, and stock price crashes. The results indicated that business strategy affects stock price crash risk, with the effect being stronger in aggressive firms and weaker in defensive firms. Additionally, high stock valuation positively influences stock price crash risk, and business strategy enhances the relationship between stock overvaluation and risk.

Cheng et al. (2013) concluded that there is a positive relationship between product market competition and earnings quality. Their results also indicate that there is a positive relationship between product market competition and the accuracy of public and confidential information available to investors and analysts.

Feso (2013) investigated the effect of capital structure and product market competition on firm performance. The results of the study showed that there is a direct and significant relationship between capital structure and firm performance, but competition in the product market has no effect on firm performance.

Ali et al. (2012) showed that competition in the product market enhances the ability of firms to compare within similar industries and improves the quality of managers' forecasts in concentrated markets. Despite foreign research on this topic, no study in Iran directly examines the subject of this research.

Boehner et al. (2011), in a study titled *Product Market Competition, Managerial Incentives, and Firm Valuation*, found that there is an inverse relationship between product market competition and firm performance, with performance decreasing as competition increases. This nonlinear relationship also reflects the durability of managerial incentives as competition intensifies.

Rostami et al. (2021), in a study entitled *The Impact of Product Market Competition and Life Cycle on Firms' Business Strategy*, focused on the impact of product market competition and the life cycle stages of firms on their business strategies. Data from 115 sample firms listed on the Tehran Stock Exchange from 2012 to 2018 was analyzed. The results showed that product market competition significantly influences business strategy, with firms in highly competitive industries preferring defensive strategies. The life cycle stage also affects strategy choices, with firms in the growth stage being more inclined to adopt aggressive strategies than firms in the maturation or decline stages. Furthermore, new firms tend to adopt opportunistic strategies, while older firms prefer analytical strategies.

Ghanbari and Salmasi (2021), in a study entitled *The Impact of Economic Crisis and Economic Growth on Cost Stickiness*, found that cost stickiness behaves differently in various economic periods. During economic prosperity, cost stickiness increases, but during recessions and periods of severe sanctions (such as the Corona period), cost stickiness decreases.

Fattahi et al. (2020), in a study titled *Cost Stickiness and Credit Risk of Banks*, found a positive and significant relationship between cost stickiness and the credit risk of banks. Increased cost stickiness leads to a decrease in asset quality, increased profit instability, and consequently, higher credit risk.

In a study titled *The Effect of Ownership Concentration on the Relationship between Cost Stickiness and Fixed Asset Investment in the Tehran Stock Exchange*, the research found an inverse and significant relationship between cost stickiness and fixed asset investment. Furthermore, ownership concentration positively influences the relationship between cost stickiness and fixed asset investment.

Vaghfi et al. (2019), in a study titled *Study of Cost Stickiness Behavior in Tehran Stock Exchange Firms*, concluded that cost stickiness occurs across various cost categories (cost of goods sold, general and administrative expenses, and operational costs). The study found that the increase in costs is greater than the decrease for the same change in activity levels.

In a study titled *The Effect of Ownership Concentration on the Relationship between Cost Stickiness and Risk of Firms Listed on the Tehran Stock Exchange*, Pourshyadeh et al. (2019) concluded that ownership concentration significantly reduces the relationship between cost stickiness and firm risk.

Hajiha et al. (2019), in a study titled *The Effect of Managers' Short-Run Attitude on Cost Stickiness of Firms Listed in Tehran Stock Exchange*, found that earnings management, based on real items, has a negative and significant relationship with cost stickiness.

Khodadeh Shamloo and Farsi (2018) examined the effect of competition in the product market on the relationship between business strategies and debt maturity structure, finding that aggressive business strategies are inversely related to the maturity of short-term debts.

Namazi and Fathali (2018), in a study titled *Investigating the Effect of Intellectual Capital and Free Cash Flow on Cost Stickiness in Tehran Stock Exchange Firms*, concluded that intellectual capital and free cash flow significantly affect cost stickiness, with higher intellectual capital leading to less cost stickiness.

Trivedi et al. (2017), in a study titled *The Effect of Firm Strategy and Management Ability on Cost Asymmetry*, found that investment strategy and management ability increase cost asymmetry, while competitive strategies and financing reduce it.

Diyanati Deilami and Bayati (2015) investigated the relationship between competition in the product market and independent auditor's fees, finding that market competition significantly affects auditor fees.

Fakhari et al. (2015) studied the effect of product market competition on the valuation and market of holding cash by firms, finding that increasing market competition positively affects the capital market valuation of cash holdings.

Vaez et al. (2015) investigated the effect of product market competition on the quality of earnings, finding that actual competition does not significantly affect earnings quality, but potential competition does.

Meshki et al. (2015), in a study titled *The Market Power of the Product and Industry Competitiveness on Earnings Sustainability*, found that increased competition improves earnings sustainability and that market power negatively affects sustainability.

Khodadadi et al. (2014) investigated the effect of product market competition on dividend policy, finding that higher competition reduces dividends, as firms in concentrated markets with high competition tend to conserve cash.

Namazi et al. (2014) examined the relationship between product market competition and financial information quality, finding a significant positive relationship between competition and financial information quality.

Research Methodology

The presented research is of an applied nature, and, methodologically, it is classified as causal and post-event correlation because it investigates the relationships after the occurrence of an event. The statistical population studied in this research consists of firms listed on the Tehran Stock Exchange, and the study period spans from 2016 to 2023. Firms that met the criteria for systematic elimination were selected as the final sample. To ensure comparability, the selected firms should have their financial year ending in March, and they should not have changed their fiscal year during the 8-year review period. Furthermore, the firms must have disclosed the required information, and this information must be accessible for analysis. By applying these conditions, 130 firms were chosen as the final sample after the screening process from the statistical population.

The data analysis of the sample firms was conducted using the panel data method with Eviews 12 software, and the standard error correction technique was applied for the final hypothesis testing. Various factors allow the researcher to gather more complete and reliable information, and regression analysis, using the standard error correction method, is considered the most suitable approach for investigating the relationships in this study.

Operational Definitions of Variables

Research Dependent Variable: Corporate Business Competitive Strategy

In the present study, following Rostami et al. (2021) and Tanani and Mohebkhah (2014), the combined scoring system proposed by Eitner and Lerker (1997) is used to determine the strategic type of each firm to calculate the combined scores for five ratios: sales growth rate, advertising cost to total sales, number of employees to sales, market value of the firm to its

book value, and the ratio of fixed assets to total assets. The scoring system is applied as follows:

First, the firms are divided into five groups based on the first four ratios, ranked from highest to lowest. In this ranking, the firm in the top quantile receives a score of 5, the firm in the lowest quantile receives a score of 1, and the other firms are scored according to their respective quantiles.

Next, the firms are ranked according to the last ratio. This time, the firm in the top quantile receives 1 point, the firm in the lowest quantile receives 5 points, and the rest of the firms are assigned scores based on their corresponding quantiles.

In the final step, the points obtained from the two stages are summed to obtain the final score for each firm. The combined score (sum of the five ratios) for each firm will range between 5 and 25 for a given year. Firms with a total score between 5 and 15 are classified as defensive firms, while firms with a total score between 15 and 25 are classified as aggressive firms.

Table 1: How to Score a Business Competitive Strategy

One fifth	Sales Growth Rate	Advertising Cost	Number of Employees	Firm Market Value	Fixed Assets
		Total Sales	Total Sales	Book Value of the Firm	Total Assets
First	5	5	5	5	1
Second	4	4	4	4	2
Third	3	3	3	3	3
Fourth	2	2	2	2	4
Five	1	1	1	1	5

Independent Research Variable: Product Market Competition (HHI)

Market concentration within industries is calculated using the Herfindahl-Hirschmann Index (HHI). The Herfindahl-Hirschmann Index measures the level of competitiveness within various industries. In this study, if the median value of the index in the sample is equal to 1, the value will be considered 1; otherwise, it will be assigned a value of 0.

$HHI = \sum^{n}_{i=1} (Si/S)^2$

Where:
HHI: Herfindahl-Hirschmann Index
SI: Firm Sales Revenue
S: Total sales revenue of firms in the firm's industry
n: The number of firms in the industry (Tariverdi et al., 2017).

Moderating Variable: Cost Stickiness (CS)

The concept of cost stickiness was first introduced by Anderson et al. (2003). Cost stickiness is a type of cost behavior that reflects the extent and manner in which costs change relative to changes in revenue over a period. Anderson et al. used a virtual regression model to measure cost stickiness, which is expressed as follows: Additionally, Kurdistani (2020), Reimer (2018), and Hamburg (2018) employed a similar approach to measure cost stickiness, with the remainder of the model indicating the level of cost stickiness.

$$log\left(\frac{\text{SGAt}}{\text{SGAt}-1}\right) = \beta_0 + \beta_1\, log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + \beta_2\, Dt * log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + e$$

In the above regard:
SGA: Sales, Administrative, and General Expenses in the Current Year (Operating Cost)
SGAt-1: Sales, administrative, and general expenses in the previous year

Sales: The sum of sales revenues in the current year.
Sales $_{t-1}$: The sum of sales revenues in the previous year
D: The dummy variable is the model that has two values (0 and 1). This variable is assigned to the number (1) when the sales revenues of the current year have decreased compared to the previous year (i.e., periods of decline in sales) and otherwise to the number (0). The remainder of the model is used as cost stickiness (Fatahi, Kordestani & Rastgooyan, 2020).

Control Variables

ROA: To calculate this variable, the net profit before interest and tax on total assets is used.
SIZE: To calculate this variable, the natural logarithm of the sum of assets is used.
LEV: The sum of total liabilities divided by the sum of total assets is used to calculate this variable.
MTB: To calculate this variable, dividing the capital market value by the book value of the capital at the end of the fiscal year has been used.

Research Regression Model

$$Strategy_{i,t} = + \beta \beta 0_1 HHI_{i,t} + \beta 2\ CS_{i,t} + \beta 3\ (HHI_{i,t} \times CS_{i,t}) + \beta 4 LEV_{i,t} + \beta 5\ SIZE_{i,t} + \beta 6\ ROA_{i,t} + \beta 7\ MTB_{i,t} + \varepsilon i,t$$

Descriptive findings

Descriptive Statistics of Research Variables

To investigate the general characteristics of the variables and analyze them accurately, it is necessary to be familiar with the descriptive statistics related to the variables. Table (2) shows the descriptive statistics of the data related to the variables used in the research after identifying and replacing the statistical outliers. The presented descriptive statistics are related to 130 sample firms in the 8 years (2016-2023) and equivalent to 1040 firm-years).

The central measure of the data is the mean, which represents the equilibrium point and the center of gravity of the distribution, making it an effective indicator of centrality. For instance, the average value for the leverage variable is 0.55, indicating that most of the data is concentrated on this point. In general, dispersion measures assess the extent to which data points deviate from one another or from the mean. One of the key measures of dispersion is the standard deviation. For example, the standard deviation for the firm's growth (market value to book ratio) is 5.63, while the standard deviation for cost stickiness is 0.10, indicating that these two variables have the highest and lowest standard deviations, respectively. The minimum and maximum values provide insight into the lowest and highest values for each variable. For example, the highest value for firm size is 19.77.

The results in Table (3) show that the significance level of the test in the research model is below 5%, indicating the presence of heteroscedasticity in the error terms. This issue was addressed in the final estimation of the models by applying the GLS (Generalized The Least Squares) method.

Table (2): Descriptive statistics of quantitative variables of the research

Variable	Mean	Max	Min.	S. dev.
CS	0.008	0.49	0.14-	0.10
Strategy	14.96	24.00	5.00	3.14
HHI	0.075	1.00	0.00001	0.21
ROA	0.14	0.67	0.001-	0.14
LEV	0.55	0.99	0.10	0.20
SIZE	14.66	19.77	11.03	1.50
MTB	6.40	17.99	1.02	5.63

Table (3): Results of the Variance Test

Test	Test Statistics	Sig
Research Model	18.34	0.010

Table (4): Results of the Serial Autocorrelation Test

Test	Test Statistics	Sig
Research Model	4.16	0.12

According to the results in Table (4), the significance level of the serial autocorrelation test for the research model is greater than 5%, indicating the absence of serial autocorrelation in the model.

According to the results presented in Table (5), the significance level of the variables in the reliability test is less than 5%, indicating that the variables are stable.

According to the results presented in Table (6), it can be observed that the significance level of the test for the research model's hypotheses exceeds 5%, indicating the acceptance of the common effects model. Therefore, there is no need to present the Hausman test (Banimahd et al., 2016).

The results in Table (7) indicate that the competition variable in the product market, with a negative coefficient (-0.83) and a significance level below 5% (0.025), has an inverse and significant relationship with the business strategy of firms. Thus, the first hypothesis of the research is accepted at the 5% error level. Additionally, the variable of cost stickiness, with a significance level above 5% (0.63), shows no significant relationship with the business strategy of firms, meaning the second hypothesis of the research is rejected at the 5% error level. Furthermore, the interaction between competition in the product market and cost stickiness, with a significance level greater than 5% (0.70), does not significantly affect the business strategy of firms. In other words, cost stickiness does not influence the relationship between competition in the product market and business strategy. Therefore, the third hypothesis of the research is also rejected at the 5% error level. All control variables (firm size, return on assets, firm growth, and financial leverage), with a significance level below 5%, exhibit a significant relationship with the dependent variable of the research. The coefficient of determination (R^2) is 38%, indicating that the independent and control variables in the model explain 38% of the variation in the dependent variable. Additionally, the value of the Durbin-Watson statistic is 1.96, which suggests that there is no serial correlation among the residuals of the model.

Table (5): Manai Test (Levin, Lin, and Chu) of Research Quantitative Variables

Variable	Test Statistics	Sig	Results
CS	30.4083-	0.0000	Stationary
Strategy	79.7548-	0.0000	Stationary
HHI	1209.7-	0.0000	Stationary
ROA	36.3154-	0.0000	Stationary
LEV	69.0191-	0.0000	Stationary
SIZE	34.5485-	0.0000	Stationary
MTB	52.8910-	0.0000	Stationary

Table (6): F-Limmer (Chow) Test Results

Test	Test Statistics	Sig
Research Model	0.97	0.56

Table (7): The result of testing the research hypotheses

$Strategy_{i,t} = + \beta \beta 0_1 HHI_{i,t} + \beta 2\ CS_{i,t} + \beta 3\ (HHI_{i,t} \times CS_{i,t}) + \beta 4 LEV_{i,t} + \beta 5\ SIZE_{i,t} + \beta 6\ ROA_{i,t} + \beta 7\ MTB_{i,t} + \varepsilon i,t$					
Dependent Variable: Business Strategy					
Variable	**Coefficients**	**Standard Error**	**Statistic t**	**Sig**	**VIF**
HHI	0.83-	0.37	2.24-	0.025	1.03
CS	0.33	0.71	0.47	0.63	1.14
HHI× CS	1.38	3.65	0.37	0.70	1.15
SIZE	0.55-	0.050	11.16-	0.0000	1.09
ROA	5.11	0.64	7.93	0.0000	1.68
MTB	0.25	0.013	19.07	0.0000	1.57
LEV	2.44	0.43	5.58	0.0000	1.57
Width from Origin	19.55	0.75	26.01	0.0000	-
Coefficient of Determination	0.38				
Watson Durbin	1.96				
Statistic F	90.69				
Significance level	0.0000				

Discussion & Conclusion

The main objective of this study is to examine the impact of cost stickiness and competition in the product market on the competitive business strategy of firms. In broad terms, strategy refers to the plan and vision for future goals that an entity follows in its market. In the field of management, the formulation and development of strategy is a critical responsibility of management, as it forms the foundation for vital decisions made by firm and business managers. As observed, the estimated coefficient for the competition variable in the product market, with a negative coefficient and a t-statistic value below 5%, indicates a significant and inverse relationship between the variables at the 95% confidence level.

Business strategy is typically implemented at the product or strategic business unit level, improving the competitive positioning of a firm's goods and services. It often emphasizes a specific industry or market segment. To mitigate the negative impacts of the environment and capitalize on opportunities, organizations generally adopt one of four adaptive strategies: defenders (defensive strategy), aggressors or pioneers (offensive strategy), forwarders, analysts, and passives. Defenders and attackers represent opposite ends of the strategic spectrum, and the type of competition in the market is closely tied to the strategy adopted by firms. In today's dynamic and competitive business environment, managers must select appropriate strategies to maximize environmental opportunities. In highly competitive industries, firms shift from offensive to defensive strategies, which is consistent with the inverse relationship observed in this study—when competition intensifies, firms tend to adopt defensive strategies to preserve market share and become less willing to take risks.

The results of the first hypothesis align with the findings of Rostami et al. (2021) and Cutler (2006), who concluded that firms in competitive markets adopt defensive strategies. The estimated coefficient for the cost stickiness variable, with a significance level greater than 5%, indicates that the relationship

between cost stickiness and business strategy is not significant at the 95% confidence level. Cost stickiness refers to the cost response to changes in activity levels. Specifically, costs tend to rise when sales increase but do not decrease as much when sales fall. Understanding how costs behave with fluctuations in sales and activity levels is essential for managerial decision-making. When cost behavior is not proportional to sales, leading to stickiness, managers may adjust their strategies accordingly. However, the results from this study suggest that the firm's strategy remains unchanged when cost stickiness occurs.

The estimated coefficient for the interaction between cost stickiness and competition in the product market, represented as a multiplication term in the statistical model, shows that cost stickiness does not significantly affect the relationship between competition in the product market and business strategy. Business strategy is typically executed at the strategic business unit or product level, emphasizing the improvement of the firm's competitive position in a specific industry or market segment. Competition and strategy are inherently interconnected, as the type of competitors in the market determines managerial decisions to avoid falling behind competitors. Given the increasingly dynamic and competitive business environment, managers must choose strategies that leverage environmental opportunities. Despite the potential for cost stickiness to influence managerial decisions, the results from testing the third hypothesis indicate that cost stickiness does not moderate the relationship between competition and business strategy. These findings are partly in line with the research of Lee and Lu (2021) and Tariverdi et al. (2017).

Practical Research Suggestions

Firms operating in highly competitive industries must develop well-defined strategies to ensure they stay ahead of their competitors and maintain their market share. To avoid falling behind, firms need to formulate and adopt appropriate strategic plans tailored to the competitive dynamics of their respective markets.

Before making decisions regarding business strategy, firm managers must assess the intensity of competition within the industry and the operational behaviors of competitors. This analysis enables managers to devise the most suitable strategic plan for the firm's future.

It is recommended that investors and market stakeholders take into account the intensity of competition in the industry and market when evaluating a firm's performance and managerial efficiency. Understanding this context will provide a clearer picture of the strategic choices made by managers.

Furthermore, capital market analysts should consider the competitive environment in the industry when assessing firm performance and reviewing management's strategic decisions. This approach will help ensure that the strategies adopted by firms align with the market conditions and contribute to long-term success in the industry.

Research Limitations

Walking toward a goal is often accompanied by limitations, which can slow down the achievement of the desired outcome. Research as a process aimed at solving a research problem is no exception. This section outlines the limitations of the present study to inform readers, helping them approach the generalization of the research results with greater awareness and fairness. The limitations of this study are as follows:

1) The results are based on data from firms listed on the Tehran Stock Exchange. Therefore, caution should be exercised when attempting to generalize the findings to other firms, particularly those not listed on the exchange.
2) The study does not include data from unlisted firms due to the inability to access such information.
3) Since the study's time frame spans from 2016 to 2023, caution should be exercised when generalizing the results to periods outside this range.

References

A Habib, MD Costa (2021) - Debt maturity structure and cost stickiness, Journal of Corporate Accounting-Wiley Online Library, https://doi.org/10.1002/jcaf.22479

Akbari, Mohsen, Farkhondeh, Mahsa, Ayagh, Zahra (2019) Investigating the Effect of Product Market Competition on Financial Performance by Moderating the Quality of Information Disclosure: Firms Listed in Tehran Stock Exchange. Journal of Asset Management and Financing, Vol. 7, No. (24), Vol. (1), pp. 29-44.

Ali, A., Liu, M., Xu, D., and Yao, T. (2012), "Corporate Disclosure, Analyst Forecast Dispersion, and Stock Returns," Available from URL: SSRN Working Paper Series.

Anderson, M. Banker R., and Janakiraman S. (2003) Are Selling General and Administrative Costs "Sticky"? Journal of Accounting Research 41, 4763.https://doi.org/10.1111/1475-679X.00095

Anderson, M. C., R. D. Banker, R. Huang, and S. N. Janakiraman. (2007) Cost Behavior and Fundamental Analysis of SG&A Costs. Journal of Accounting, Auditing & Finance, 22 (1), 1–28.

Bahrami, Zeinab & Izadinia, Naser (2020) Investigating the Analysis of the Impact of Earnings Management and Business Strategy on Bankruptcy Risk in Firms Listed in Tehran Stock Exchange, Shahid Ashrafi Isfahani University, Faculty of Administrative Sciences and Economics, M.Sc. Thesis.

Beiner, S., Schmid, M. M. and Wanzenried, G. (2011), "Product market competition, managerial incentives, and firm valuation," European Financial Management, No. 17, pp. 331–366.

Cheng, P., Man Paul, Y., and Cheong, H. (2013), "The Impact of Product Market Competition on Earnings Quality," Accounting and Finance, 53, PP. 137-162.

Diyanati Deilami, Zahra and Morteza Bayati (2015) The Relationship between Competition in the Product Market and Independent Auditor's Fees, Financial Accounting and Auditing Research, Vol. 1, No. 3, pp. 119-134.

Fakhari, Hossein, Seyyed Ruhollah Taghavi, and Mehdi Bashiri Jouybari (2015) Investigating the Effect of Intensity of Competition in the Product Market on Market Valuation of Firms' Cash Holdings, Journal of Financial Accounting Knowledge, Vol. 2, No. 1, pp. 47-65.

Fatahi, Yasin & Kordestani, Gholamreza & Rastgooyan, Hossein (2020) Cost Stickiness and Credit Risk of Banks, Quarterly Journal of Islamic Economics and Banking, No. 31, pp. 99-115.

Felizia Arni RudiawarniBambang, TjahjadiDian Agustia, and Noorlailie Soewarno (2022) Business strategy and industrial competition: the case of manufacturing companies. International Journal of Business Environment, Vol. 13, No. 1, Published Online: January 5, pp. 35-59.

Fosu, S. (2013), "Capital structure, product market competition, and firm performance: Evidence from South Africa," The Quarterly Review of Economics and Finance, http://dx.doi.org/10.1016/j.qref.2013.02.004

Ghanbari, Ali, & Salmasi Sawmill (2021). The Impact of Financial Crises and Economic Growth on Cost Stickiness. Accounting and management perspective. Volume (4), Issue (45). pp. 1-17.

Habib, A., & Hasan, M.M. (2017). Business strategy, overvalued equities, and stock price crash risk. Research in International Business and Finance, 39, 389-405.

Hajiha, Z., Ghaderi, Kaveh, and Ghaderi, S. (2019) The Effect of Managers' Short-Run Attitude on Cost Stickiness of Firms Listed in Tehran Stock Exchange. Asset Management and Financing, Autumn 2019 - Issue 26. pp. 27-44.

Hashemi, Seyed Abbas, & Nejati, Ali (2016) The Effect of Earnings Management on Cost Stickiness. Journal of Accounting Reviews (Chamran University). Volume 2, Issue 8, Pp. 93-108.

Homburg, C., Hoppe, A., Nasev, J., Reimer, K., & Unrig-Homburg, M. (2018). How Cost Stickiness Affects Credit Risk. Available at SSRN2792085

Izadi, Fatemeh (2013) Analysis of the Effect of Product Market Competition and Business Strategies on the Relationship between Financial Leverage and Financial Performance. M.Sc. Thesis. Faculty of Administrative Sciences and Economics, University of Isfahan.

Izadi, Minoo (2019) Investigating the Effect of Product Market Competition on the Relationship between Ownership Concentration and Dividend Policy in Firms Listed on the Tehran Stock Exchange. Financial Accounting and Auditing Research, Vol. 11, No. 42, pp. 229-249.

J Li, Z Luo (2021)- Product market competition and cost stickiness: Evidence from China Managerial and Decision Economics, 2021 - Wiley Online Library

Kheirkhah, Rosita, Asadi, Abdolreza, & Zindadel Ahmad (2019) The Relationship between Product Market Concentration and Power with the Dividend Policy of Firms Listed on the Tehran Stock Exchange. Journal of Commercial Research, No. 92, pp. 113-139.

Khodadadi, Vali Javad Nikkar, and Mohsen Rashidi Baghi (2014) The Effect of Competition in Product Market on Dividend Policy, Financial Accounting and Auditing Research, Vol. 6, No. 24. pp. 21-32.

Khodadatah Shamloo, Naser & Gharsi, Mohsen (2018) The Effect of Competitive Status in the Product Market on the Relationship between Business Strategy and Debt Maturity Structure. Conference on New Achievements in Management and Accounting Science. pp. 1-19.

Kordestani, Gholamreza & Mortazavi, Seyed Morteza (2012). Investigating the Effect of Managers' Considered Decisions on Cost Stickiness. Accounting and auditing reviews. Volume (19), Issue (67), pp. 73-90.

Meshki Miavaghi, Mehdi and Akbar Dalirian (2015). A Study of Earnings Sustainability, Industry Structure and Market Power in Tehran Stock Exchange, Journal of Commercial Research, No. 76, pp. 1-27.

Namazi, Mohammad, and Shahla Ebrahimi (2014) Investigating the Relationship between Product Market Competitive Structure and Stock Returns," Empirical Research in Financial Accounting, No. 1, pp. 9-27.

Namazi, Mohammad; Fathali, Akram (2018). Investigating the Effect of Intellectual Capital and Free Cash Flow on Cost Stickiness in Tehran Stock Exchange Firms. Empirical Research in Accounting, Winter 2018 Issue. pp. 30, pp. 223-250.

Namazi, Mohammad, Gholamreza Rezaei, and Alireza Mumtamian (2014) Product Market Competition and Quality of Accounting Information," Journal of Accounting Advancements, Shiraz University, Vol. 6, No. 2. pp. 131-166.

Nikbakht, Mohammad Reza, & Deldar, Mostafa (2016). Investigating the Behavior of Cost Stickiness and Its Impact on Audit Quality. Financial Accounting Research, Vol. 8, No. 3, Serial (29). pp. 77-100.

Nurul Houqe, M., Kerr, M., and Monem, M. (2013). Business Strategy and Earnings Quality. Electronic copy is available at: http://ssrn. Com/abstract=2198626.

Nurwati, A. (2010), "Corporate Governance and Earnings Forecasts Accuracy," Asian Review of Accounting, 18, PP. 50-67

Pour-Shiadeh, Ebrahim, Moradi, Zahra, Asadifar, Ahad, & Derakhshan, Javad (2019) The Effect

of Ownership Concentration on the Relationship between Cost Stickiness and Risk of Firms Listed in Tehran Stock Exchange. Winter Accounting and Management Outlook, Vol. 2, No. 20. pp. 1-15.

Reimer, K. (2019). Does Cost Stickiness Affect Credit Risk? In Asymmetric Cost Behavior (pp. 63-106). Springer Gabler, Wiesbad.

Rostami, Vahab & Rezaei, Leila & Tejari, Zeinab (2021) The Effect of Competition in the Product Market and Life Cycle on the Business Strategy of Firms with an Emphasis on New Firms. Studies in Intelligent Business Management, Allameh Tabataba'i University, Vol. (9), No. (36).

Tanani, Mohsen, and Mohebkhah Mohammad (2014) Investigated the Relationship between Business Strategy and Quality of Earnings and Stock Returns in Firms Listed on the Stock Exchange. Empirical Research in Accounting. Issue 13. pp. 105-127.

Tariverdi, Yadolleh, Nikkar, Javad, & Malekhodaei, Elaheh (2017) The Effect of Firm Strategy and Management Ability on Cost Asymmetry. Accounting and Auditing Reviews, University of Tehran. Volume (24), Issue (3). pp. 503-526.

Vaez, Seyed Ali, Mohammad Hossein Ghalambar, and Nasrin Ghanavati (2015) The Effect of Product Market Competition on Earnings Quality Using Factor Analysis Technique," Journal of Accounting Knowledge, Vol. 6, No. 21, pp. 129-149.

Vaghfi, Seyed Hessam, Pardin, Kaveh, & Khajehzadeh, Samiran (2019) A Study of Cost Stickiness Behavior in Tehran Stock Exchange Firms. Accounting, Accountability, and Community Interests, Winter 2019, No. 35. pp. 135-155.

WL Li, K Zheng (2020) Rollover risk and managerial cost adjustment decisions Accounting & Finance, 2020 - Wiley Online Library. https://doi.org/10.1111/acfi.12417

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Investigating the Necessity of Presenting Corporate Sustainability Materials in Management Accounting Textbooks

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Abstract

Objectives: Given the growing demands of internal and external stakeholders and the strategic importance of corporate sustainability, sustainability management accounting (SMA) has gained increasing global attention. This study examines the necessity of integrating SMA concepts and methods into management accounting textbooks to equip future management accountants with the required competencies.

Methodology/Design/Approach: The study analyzes the extent to which sustainability topics are covered in management accounting textbooks, highlighting gaps and areas for improvement. It evaluates key sustainability concepts, legal requirements, standards, and the integration of sustainability performance indicators within management accounting frameworks such as the balanced scorecard.

Findings: The analysis reveals that while textbooks provide basic coverage of sustainability concepts, legal frameworks, and environmental aspects, they largely overlook critical areas such as sustainability planning, control mechanisms, and internal sustainability reporting. These omissions limit the ability of management accountants to support corporate sustainability performance. Addressing these gaps requires a structured revision of accounting curricula based on expert recommendations.

Innovation: This study emphasizes the need for fundamental curriculum revisions to incorporate sustainability issues into management accounting education. It calls on educators and policymakers to enhance textbook content to ensure that future accountants develop the necessary SMA competencies. The findings offer constructive recommendations for overcoming obstacles to integrating sustainability into accounting education.

Keywords: Sustainability Performance, Management Accounting, Accounting Education, Management Accounting Books.

1. Introduction

Management accounting is the process of defining, measuring, aggregating, analyzing, preparing, interpreting, and exchanging information used by management to plan, evaluate, and control a business entity. It also ensures the proper use and accountability of resources (Vanini & Bochert, 2024). An important principle in any organization is that the accountant is responsible for recording and reviewing financial affairs, providing the information necessary for evaluating organizational performance (Rahnema Roudposhti et al., 2014). The primary purpose of management accounting is to provide reports that assist managers in progressing and developing the organization, helping to optimize financial decisions. One of the key advantages of management accounting is performance evaluation, where all accounting activities are assessed and reported to the manager. Among the factors that can affect a company's overall performance is the disclosure of performance-related information. Corporate sustainability is a key element of this process (Vanini & Bochert, 2024).

According to Brundtland's definition, corporate sustainability refers to the ability of a company to meet the direct needs of current stakeholders (such as shareholders, employees, and customers) without compromising its ability to meet the needs of future stakeholders (Joshi & Lee, 2016). Corporate sustainability integrates short-term economic, environmental, and social impacts with long-term corporate activities. Furthermore, regulatory and market demands for companies to disclose both financial and non-financial information about their sustainability performance are increasing, leading to changes in operational activities that are necessary for financial success while also ensuring the continuous monitoring, management, and reporting of social and environmental impacts.

To meet the information needs of external stakeholders, many companies have implemented Sustainability Management Accounting (SMA) systems. With the growing relevance of SMA systems, the question arises as to the extent to which management accountants are prepared to support managers in decision-making, reporting, and sustainability control (Schaltegger et al., 2019). Although much has been written about the necessity of sustainability management accounting systems, there is limited empirical research on how managers implement effective management control systems to achieve sustainability (Joshi & Lee, 2016). Professional organizations, such as the Institute of Management Accountants (IMA), argue that management accountants can contribute to the sustainable transformation of companies due to their expertise in gathering reliable data, evaluating options, and providing recommendations that align with the organization's purpose, values, business model, strategic initiatives, and risk management.

Given this, the issues surrounding sustainability management accounting systems should also be reflected in the academic education of management accounting students. Educational institutions must ensure that their courses not only develop students' technical competencies in management accounting but also foster a broader philosophical and ethical understanding (Sharma & Kelly, 2015). Unfortunately, there is a notable gap in research addressing this issue, as there is a "relative lack of articles specifically focusing on sustainability and accounting education." Studies show that textbooks are valuable resources for educators in selecting the structure and content of management accounting courses, with some researchers observing a textbook-based teaching approach to accounting (Irafahmi et al., 2018).

One effective way to teach sustainability performance and prepare managers proficient in sustainability concepts is to incorporate materials related to sustainability performance into management accounting textbooks. Given the growing importance of sustainability in the last few decades, such inclusion would tie the progress of companies to sustainability and ensure that future managers are equipped to support senior management in driving sustainable practices (Vanini & Bochert, 2024). Therefore, the purpose of this article is to investigate the necessity of

including corporate sustainability content in management accounting textbooks. The theoretical foundations and empirical background of the research will be reviewed, followed by the research conclusions.

Theoretical Foundations and Research Background

To make informed decisions and plan for the company's future activities, managers must rely on reliable information. The information provided to managers is crucial, as it can determine the success or failure of the business. Classified financial information is one of the most important types of information needed by managers. The preparation and analysis of the company's financial data falls under the responsibility of the accounting department (Fuzi et al., 2022).

Due to the benefits of management accounting, such as planning and providing financial and non-financial information like budgets, forecasts, and financial analyses, management receives regular updates, often on a weekly or biweekly basis. These reports are essential for decision-making, as they help managers make informed choices based on accurate data. Additionally, management accounting aids in predicting potential problems and challenges and providing solutions based on the skills and expertise of the management team. It also plays a key role in strategy management by guiding decisions on the best ways to sell and produce products according to the reports provided (Rahnema Roudposhti et al., 2014).

Given this, topics such as corporate sustainability, which impacts the overall performance of a company, should be included as supplementary subjects in management accounting textbooks. Textbooks are vital educational tools, and management accountants should be well-versed in these topics from the outset (Vanini & Bochert, 2024). Sustainability reporting, for example, began in the 1990s in response to shareholder and NGO demands for greater transparency regarding environmental and social impacts. This period highlighted the need for such reporting and the benefits it brings, with large international companies like Shell and Nike leading the way (Babaei et al., 2021).

Sustainability reporting reflects a company's environmental, social, and economic achievements, as well as its plans for future actions. It involves measuring and reporting the effects of a company's activities through economic, environmental, and social factors. The concept of sustainability, introduced in the last century, has become a crucial part of corporate activities. It embodies the commitment of businesses to implement fundamental reforms aimed at creating a just world, promoting prosperity, and ensuring that future generations can access these resources while preserving the surrounding environment and the cultural integrity of communities (Hosseini & Ebrahimi, 2023).

Despite being a topic of ongoing societal debate, sustainability remains a significant concern, particularly as businesses grow and diversify. Although no universally accepted model exists for sustainability reporting, accountants are now expected to provide more detailed information in management reports than in the past (Amin & Salehnejad, 2020). The field of sustainability accounting is still developing, with a variety of reporting methods and sustainability indicators in use. Effectively integrating these indicators remains a challenge, and this is where the role of accountants becomes crucial for ensuring transparency, particularly regarding social and environmental impacts. Even with increasing reporting requirements, more organizational participation is expected in this area (Chaltiger et al., 2022).

Several theoretical frameworks have been proposed to explain corporate sustainability, each offering a unique perspective based on different theoretical backgrounds. These include legitimacy theory, stakeholder theory, and agency theory. Each theory provides a distinct lens through which corporate sustainability can be understood and analyzed (Samii & Jamei, 2018).

A. Legitimacy Theory: Legitimacy theory, rooted in the political economy paradigm, posits that an

organization must maintain its social role by responding to the needs of society and providing what it seeks. According to this theory, an organization's survival is sustained by market pressures and societal expectations. Thus, understanding society's broader concerns helps to align organizational behavior with societal expectations (Samii & Jamei, 2018).

B. Stakeholder Groups Theory: Stakeholder Groups Theory is a normative approach based on an ethical framework. It emphasizes that companies, as part of society, have obligations not only to shareholders but also to other groups and beyond the legal and contractual requirements. According to this theory, the primary goal of corporate social responsibility is to create value for stakeholders while integrating ethical considerations into business decisions. The key concern is how to address stakeholder interests and incorporate them into the decision-making process of companies (Yeganeh & Barzegar, 2014).

C. Agency Theory: Agency theory, which dates back over forty years, was first proposed by Jensen and Meckling in 1976. The theory has its roots in contract theory, which views an organization as a network of contracts. Agency theory specifically examines the relationships within these contracts, focusing on the principal-agent relationship and the associated challenges. It addresses how to align the interests of principals (e.g., shareholders) with those of agents (e.g., managers) who may have different objectives (Arab Salehi et al., 2013).

The undesirable short-term and long-term impacts of companies on their social and environmental surroundings have gained significant attention. More than 90% of CEOs worldwide agree that sustainability will play a crucial role in the future success of their businesses. Many also acknowledge a clear correlation between sustainability performance and business value (United Nations, 2019).

Effective sustainability management accounting (SMA) should be aligned with sustainability strategies and goals, providing relevant information to ensure persistence in achieving these objectives (Starik & Kanashiro, 2013). The need for producing such information includes ensuring compliance with external sustainability reporting regulations, assessing market demands, responding to media inquiries, and mitigating corporate social and environmental risks.

In conclusion, SMA can be defined as the process of collecting, analyzing, and disseminating sustainability-related information to assist managers in addressing sustainability issues, achieving sustainability goals, and reporting to external stakeholders (Bennett et al., 2016). Furthermore, SMA encompasses sustainability strategy questions, sustainability assessment, sustainability management control, and sustainability reporting (Maas et al., 2016).

In general, when considering the accounting requirements for sustainability management in a company's performance, it is possible to distinguish between an external and an internal perspective (Corsi & Brunella, 2020).

The **external perspective** focuses on the reporting and disclosure of sustainability. The main objective here is to communicate information to external stakeholders about how the company is operating to improve its economic, environmental, and social efficiency (Daub, 2007). This perspective aims to demonstrate the company's commitment to sustainability through transparent reporting practices.

On the other hand, the **internal-outward perspective** views sustainability management accounting as a part of corporate management. The goal here is to integrate sustainability management accounting with other management control systems (Joshi & Lee, 2016; Moss et al., 2016). This internal perspective is driven by market forces that focus on providing information to support decision-making and to implement the company's strategy (Bennett & Schaltegger, 2013).

While the external perspective can be the primary motivation for companies to address sustainability issues, focusing solely on this can limit the broader impact of sustainable development. A more holistic approach, combining both internal and external

perspectives, promotes sustainable development and creates value for both the organization and society as a whole. The general goal of sustainability management accounting is to provide managers with relevant sustainability information that can improve decision-making and help achieve organizational goals (Vanini & Botchert, 2024).

Chaltiger et al. (2022) propose a framework for sustainability management accounting that considers the situational context, such as how external demands and expectations affect a company's sustainability management, and the transformation achieved by the company's sustainability management, such as how it contributes to sustainable development beyond its organizational boundaries. These two aspects are governed by actions that have direct economic, social, and environmental impacts.

One possible explanation for the limited role of management accountants in sustainability management accounting is the lack of awareness regarding the concepts and methods of this field (Egan & Tweedie, 2018; Botes et al., 2014). Knowledge in this area can be acquired through professional bodies during a management accountant's career or by integrating sustainability management accounting into academic textbooks before students enter the profession. This study focuses on the role of academic textbooks in teaching management accounting and the integration of sustainability practices into this teaching.

Integrating sustainability into university accounting education has several benefits, such as strengthening students' awareness of ethical issues, improving their critical thinking skills, and fostering interdisciplinary competencies (Boulianne & Keddie, 2018; Vanini & Botchert, 2024). Numerous studies, including those by Vanini and Bochert (2024), show that providing a learning experience focused on sustainability significantly enhances students' understanding of sustainable business performance and environmental responsibility (Lee et al., 2017).

Wynder et al. (2013) concluded that education plays a crucial role in providing the necessary understanding of sustainability, emphasizing the strategic importance of environmental actions. Although attitudes and perceptions of business and accounting students regarding social responsibility and sustainability are influenced by cultural, socioeconomic, and legal factors (Fuzzi et al., 2022), studies also show that fostering sustainability competence among future management accountants is vital for reducing superficial engagement with sustainability issues. The use of sustainability information is essential for evaluating or disclosing sustainability information unrelated to external stakeholders (Hahn & Reimsbach, 2014).

Another group of studies has investigated the integration of sustainability performance in educational textbooks. These studies highlight that accounting lags behind other management disciplines in incorporating sustainability performance into textbooks (Mburayi & Wall, 2018). As a result, the need to incorporate sustainability topics into management accounting textbooks is crucial for preparing managers to enter the market and for developing specialized expertise in sustainability (Vanini & Bochert, 2024).

In their study, Vanini and Botchert (2024) discussed the growing need to present corporate sustainability topics in management accounting textbooks. They emphasized that due to the increasing demands of both external and internal stakeholders, sustainability topics are becoming more strategically important. A prerequisite for the successful implementation of Sustainability Management Accounting (SMA) is adequate training for the next generation of management accountants. Therefore, sustainability topics should be included in management accounting textbooks, which serve as an essential resource for educators in determining course structure and content.

Fuzzi et al. (2022), in their study on sustainability management accounting and organizational performance, stated that SMA can enhance organizational performance. They recommended that manufacturing practitioners and researchers adopt a fundamental approach to improve organizational

performance through the implementation of sustainability management accounting and environmental management systems.

The studies referenced here illustrate the evolving role of management accounting in addressing sustainability challenges and highlight the complex relationship between accounting practices, organizational characteristics, and corporate sustainability.

1) **Societal Perspective on Sustainable Development**: Chaltiger et al. (2022) emphasize that sustainable development requires a broader societal view, where businesses are expected to contribute to solving global sustainability problems beyond their organizational boundaries. These macro-level developments, such as environmental regulations and societal industry standards, increase the need for companies to adjust their management accounting systems to address sustainability. This reflects the growing pressure on firms to not only comply with regulations, but also to actively contribute to market-level sustainability initiatives like mitigating the greenhouse effect.
2) **Involvement of Management Accountants**: Petersen et al. (2021) point out that management accountants are typically less involved in sustainability-related matters compared to non-accounting professionals, suggesting that sustainability reporting is often handled by external consultants. This highlights a gap in expertise and involvement within the accounting profession concerning sustainability issues.
3) **Evolution of Management Accounting in Sustainability**: Nassereddine and Ahmad (2019) argue that traditional management accounting has focused on financial performance, leaving environmental and social performance metrics underdeveloped or poorly integrated. Despite the increasing demand for sustainability initiatives, the link between financial, environmental, and social performance remains weak. The study suggests that a more integrated approach to sustainability reporting is needed, focusing on balancing financial priorities with environmental and social goals.
4) **Educational and Professional Requirements**: Boulianne and Keddie (2018) stress the importance of professional bodies and competency maps in shaping the education and examination content for management accountants. These guidelines help prepare future accountants for addressing sustainability challenges by integrating sustainability issues into management accounting curricula at the undergraduate and postgraduate levels.
5) **Integrated Sustainability Framework**: Maas et al. (2016) propose an integrated framework for sustainability assessment, accounting, control, and reporting. This framework seeks to unify the various tools currently used to manage sustainability in organizations, suggesting that a holistic approach can help both researchers and practitioners better understand and implement sustainable practices in management accounting.
6) **Low Involvement of Accounting Professionals in Sustainability**: Ballou et al. (2012) and Arroyo (2012) indicate that accounting professionals, despite being central to performance measurement, are rarely involved in sustainability initiatives. This is partly due to the historical focus on financial rather than social or environmental performance and a lack of attention to the role of institutional theory in shaping changes in management accounting practices.
7) **Organizational Characteristics and Sustainability**: Karamshahi et al. (2023) explore how firm characteristics, such as size and lifespan, significantly impact the intensity with which management accounting practices are applied to sustainability. Their findings

suggest that while organizational factors like firm age and structure are key drivers in shaping accounting practices, ownership structure does not appear to significantly affect sustainability outcomes. This indicates that larger or longer-established firms may be better equipped to integrate sustainability into their accounting systems, but the link between management accounting performance and corporate sustainability remains strong across organizational types.

In conclusion, these studies collectively reveal that while there is growing recognition of the importance of sustainability in management accounting, there is a notable lag in fully integrating environmental and social considerations into conventional accounting practices. This gap is partly due to the lack of involvement of management accountants in sustainability initiatives and the slow evolution of educational curricula and professional standards to incorporate sustainability into accounting frameworks. Furthermore, organizational characteristics such as size and longevity influence how sustainability is integrated into management accounting, suggesting that larger or more mature firms are more likely to incorporate sustainability into their financial practices.

The studies you referenced offer valuable insights into the intersection of management accounting, sustainability, and the role of information technology in shaping these practices. Here is a summary and analysis of the key findings:

- **Sustainability Accounting Model (Sadeghi & Banitalebi Dehkordi, 2022)**:
  This research proposes a sustainability accounting model based on both positive and normative theories. It emphasizes the need for accounting to evolve and reflect the broader goals of sustainability, focusing on environmental and social impacts alongside financial considerations. The model advocates for reports that address economic, social, and environmental efficiency, aligning accounting practices with sustainable development goals. The study stresses the importance of considering organizational and social contexts in developing sustainability accounting frameworks.
- **Management Accounting Techniques and Sustainability (Azizpanah et al., 2022):**
  This study explores how management accounting techniques (e.g., cost management, financial strategy, decision-making) impact firm sustainability. The findings suggest that organizational culture plays a key role in strengthening the effectiveness of these techniques on sustainability, with culture enhancing their impact by 16%. This implies that organizational culture is a critical enabler of sustainability efforts through the application of management accounting practices.
- **Accounting Constructs of Sustainability and Financial Health (Ghaderi et al., 2021):**
  Ghaderi et al. highlight the link between sustainability accounting constructs (e.g., voluntary accounting activities, transparency, and social responsibility reporting) and the financial health of firms. The study emphasizes that stable accounting characteristics are crucial to avoiding financial distress. If stakeholders cannot rely on accurate and transparent sustainability accounting information, the financial health of a company is at risk.
- **Sustainability Reporting and Value Creation (Maboudi et al., 2021):**
  This study examines the relationship between management accounting techniques, sustainability reporting, and value creation. It finds that the disclosure of sustainability reporting components positively affects value creation, both directly and indirectly. The indirect effect via sustainability reporting disclosure is stronger, suggesting that transparency in reporting is a powerful mechanism for enhancing value creation in companies.

- **Sustainability, CSR, and Management Accounting (Rezaei, 2020):**
  Rezaei's review of thematic literature emphasizes the integration of sustainability and CSR within management accounting systems. Research has increasingly focused on embedding sustainability into management control systems, reflecting a shift from traditional financial accounting towards broader considerations that include social and environmental factors.
- **Institutionalism and Management Accounting Change (Shojaei et al., 2017):**
  This conceptual framework explores how institutional theory can explain changes in management accounting in response to sustainability. The study highlights the need for a new approach to understanding these changes, emphasizing the process of adapting accounting practices to organizational contexts. The framework suggests that change at the individual level involves integrating new procedures, while organizational-level change requires decoding and applying these procedures in alignment with institutional contexts.
- **Impact of IT on Convergence (Rahnema Roudposhti & Homayouni Rad, 2016):**
  This study investigates the convergence of management accounting and financial accounting, particularly through the lens of information technology. It concludes that information technology plays a significant role in the convergence of accounting systems, particularly in the technical and technological fields. The integration of information systems and software, combined with standardization efforts, facilitates convergence. However, this process is more advanced in the technical and technological domains than in the behavioral and organizational fields.

Key Takeaways

- **Sustainability Integration**: A central theme in these studies is the integration of sustainability into accounting practices. This involves expanding traditional accounting frameworks to include environmental and social impacts alongside financial performance.
- **Organizational Culture**: The role of organizational culture is highlighted as a key factor in strengthening the impact of management accounting techniques on sustainability efforts. A supportive culture enhances the effectiveness of these techniques.
- **Transparency and Reporting**: Several studies emphasize the importance of transparent reporting on sustainability, noting that disclosures can significantly enhance value creation by fostering trust among stakeholders and aligning business practices with sustainability goals.
- **Institutional and Technological Changes**: Changes in management accounting are influenced by both institutional pressures and technological advancements. The studies highlight the role of institutional theory in understanding these shifts and the pivotal role of information technology in converging management and financial accounting.

These studies provide a comprehensive view of how management accounting is evolving in the context of sustainability, with organizational culture, transparency, and technological advancements playing critical roles in shaping this transformation.

Table (1). Comparison of the results obtained in the field of the research topic

Author (year)	Results
Chalting (2022)	The theoretical framework of sustainability management accounting suggests that it considers the situational context and the transformation achieved by the sustainability management of a company.

Author (year)	Results
Winder et al. (2013)	Education plays an important role in providing the understanding necessary to emphasize the strategic importance of environmental actions.
Murabi & Wall (2018)	Accounting lags behind other management disciplines in embedding sustainability performance in the textbooks of this field.
Vanini & Butchert (2024)	The prerequisite for successful people to implement sustainability management accounting is adequate training for the next generation of management accountants.
Fuzzy et al. (2022)	Sustainability management accounting can increase organizational performance.
Nasreddin & Ahmed (2019)	The role of management accounting has historically been directed towards the economic and financial dimensions of performance, so its capacity to evolve towards the integration of these standards in dimensions, management, and performance reporting practices has been questioned.
Karamshahi et al. (2023)	In a study titled "The Effect of Management Accounting Procedures on Corporate Sustainability," it was stated that organizational characteristics such as the size and life of the firm have a significant effect on the intensity of the use of management accounting activities at the 99% confidence level and the skill and structure of the firm at the 95% confidence level.
Shojaei et al. (2017)	Management accounting has changed a lot. In the meantime, the emergence of new management accounting procedures has not been adequately explained by the old and new traditional institutionalism theories.

The summary of results from Table (1) highlights key factors identified by researchers in the field of management accounting and sustainability performance. These factors address existing gaps in the field and suggest pathways for development. Here is a detailed breakdown of the observations and recommendations:

1) **Education and Knowledge Transfer**:
   - **Importance of Education**: One of the most critical factors highlighted is education. Researchers emphasize that sustainability management accounting concepts should be incorporated into management accounting curricula from the very beginning of accountants' training. By embedding these concepts in textbooks and educational resources, accountants will be better equipped to understand and integrate sustainability considerations into their professional practices. This will help close the knowledge gap and ensure that new accountants are familiar with sustainability principles, which can ultimately enhance the role of accounting in sustainable development.
   - **Recommendation**: Management accounting textbooks should be updated and expanded to include sustainability topics, allowing the field to compete with other disciplines that have already integrated sustainability into their curricula.
2) **Impact of Sustainability Performance on Organizational and Managerial Performance:**
   - **Organizational Impact**: A second major focus is on the positive effects of sustainability performance on the overall performance of organizations and managers. Sustainability practices are increasingly recognized as contributing to long-term organizational success. By integrating sustainability into management accounting, organizations can drive both financial and non-financial performance improvements. This can lead to enhanced decision-making, better resource allocation, and more sustainable growth.
   - **Recommendation**: It is crucial to investigate and highlight how sustainability performance can influence the overall success and efficiency of businesses. This will encourage organizations to adopt sustainable practices not only for ethical reasons but also for strategic, performance-enhancing motives.

3) **Company Characteristics and Their Influence on Sustainability Performance:**
   - **Role of Company Characteristics**: A third group of researchers has focused on how the specific characteristics of companies—such as their size, industry, and corporate culture—affect their ability to implement and benefit from sustainability performance. The diversity in company types means that a one-size-fits-all approach to sustainability accounting may not be effective. Different organizational contexts require tailored approaches to sustainability performance.
   - **Recommendation**: Future research and practice should take into account the varying characteristics of companies and how these influence their sustainability performance. This can help in developing more context-specific strategies for integrating sustainability into management accounting.

Pathways for Development

To advance the field of sustainability performance in management accounting, it is suggested that:

- **Educational Foundations**: The integration of sustainability concepts into management accounting education should be prioritized. Textbooks and academic curricula need to reflect these changes so that future accountants are well-versed in sustainability accounting principles.
- **Performance Outcomes**: Emphasizing the connection between sustainability performance and improved organizational performance will help demonstrate the value of sustainability initiatives to business leaders and managers.
- **Contextual Sensitivity**: Understanding the specific characteristics of different companies will allow for more effective implementation of sustainability practices tailored to each organization's unique context.

In conclusion, the development of sustainability performance in management accounting requires a multi-faceted approach that includes enhancing education, understanding the organizational impacts, and considering company-specific factors to ensure that sustainability becomes a key component of the management accounting discipline.

Conclusion

The present study examines the necessity of presenting corporate sustainability materials in management accounting books in the form of a review of internal and external research and provides suggestions in this regard. During this period, both the need for this type of reporting and the benefits derived from it have been revealed. Sustainability reporting shows the environmental, social, and economic achievements of a company and the plans that it will implement in the future. In other words, the definition of measuring and reporting the effects of the company's activities in the form of economic, environmental, and social factors is the main focus of sustainability reporting. KPMG Audit Firm defines sustainability reports as reports that include quantitative and qualitative information on financial, economic, social, ethical, and environmental. Considering the importance of educational books in higher university courses in the training and training of expert managers in various fields, the importance of the content of these textbooks cannot be overlooked. Considering that management accounting is one of the applied sciences in the field of accounting and one of the proposed methods is the rejection of the higher course of this field. Therefore, the content of this course can be presented in such a way that those who are the audience of these courses have a complete comprehensiveness of the world's modern sciences. Due to the introduction of the concept of corporate sustainability in the last few decades and the importance that scientific and academic circles in the world have attached to it, it has a special place in academic conferences inside and outside the country (such as the annual national conference on accounting in 2023). It has been allocated to itself. It is necessary to provide the conditions that can be prepared to educate and nurture the topics related to sustainability

performance by including them in management accounting books in higher courses in a way that they can later provide useful information to the CEO and the stakeholders. Therefore, by examining the foundations and empirical background used in this field, it can be concluded that it is necessary and necessary to add the topics and sub-categories of corporate sustainability performance as a separate and detailed topic in management accounting textbooks in the higher course of accounting.

References

Amin, Vahid & Salehnejad, Seyed Hassan. (2021). The Effect of Firm Sustainability Performance on Economic Value Added during the Firm Life Cycle. *Financial Accounting Knowledge, 7*(2), 1-30.

Azizpanah, Maryam, Sayadi Soumar, Ali, & Oshani, Mohammad. (2015). Investigating the Effect of Applying Management Accounting Techniques on Firm Sustainability with the Moderating Role of Organizational Culture Based on Lebedev's Model. *Journal of Management Accounting, 15*(54), 129-146.

Arab Salehi, Mehdi, Sadeghi, Ghazal, Moinuddin, & Mahmoud. (2013). The Relationship between Social Responsibility and Financial Performance of Companies Listed in Tehran Stock Exchange. *Journal of Empirical Accounting Research, 3*(3), 1-20.

Arroyo, P. (2012). Management accounting change and sustainability: an institutional approach. *Journal of Accounting & Organizational Change, 8*(3), 286-309.

Ballou, B., Casey, R. J., Grenier, J. H., & Heitger, D. L. (2012). Exploring the strategic integration of sustainability initiatives: opportunities for accounting research. *Accounting Horizon, 26*, 265–288.

Babaei, Fatemeh, Rahmani, A., Homayoun, Saeed, & Amin, Vahid. (2018). The Relationship between Corporate Sustainability Performance and Firm Value: With Emphasis on the Role of Disclosure Score and Firm Size. *Journal of Accounting Knowledge, 12*(3), 1-27.

Bennett, M., Schaltegger, S., & Zvezdov, D. (2013). Exploring Corporate Practices in Management Accounting for Sustainability. London/UK: ICAEW.

Botes, V., Low, M., & Chapman, J. (2014). Is accounting education sufficiently sustainable? *Sustainability Accounting, Management and Policy Journal, 5*(1), 95–124.

Boulianne, E. & Keddie, L. S. (2018). Where is sustainability within the Canadian education program? Sustainability accounting. Education, regulation, reporting, and stakeholders. *Advances in Environmental Accounting & Management, 7*, 71–112.

Cavanaugh, J. D., & Powers, M. R. (2017). Sustainability management and accounting: The role of human capital. *International Journal of Environmental Sustainability, 8*(2), 255–268.

Corsi, K., & Brunella, A. (2020). Role and implementation of sustainability management control tools: Critical aspects in the Italian context. *Accounting, Auditing & Accountability Journal, 34*(9), 29–56.

Daub, C. H. (2007). Assessing the quality of sustainability reporting: An alternative methodological approach. *Journal of Cleaner Production, 15*, 75–85.

Egan, M., & Tweedie, D. (2018). A "green" accountant is difficult to find. Can accountants contribute to sustainability management incentives? *Accounting, Auditing & Accountability Journal, 31*(6), 1749–1773.

Fatemi, A., & Fooladi, M. (2009). Corporate social performance and shareholder wealth. *Journal of Banking & Finance, 33*(4), 1154-1163.

Fuzi, N. M., Adam, S., Ramdan, M. R., Ong, S. Y. Y., Osman, J., Kolandan, S., ... & Abdullah, K. (2022). Sustainability Management Accounting and Organizational Performance: The Mediating Role of Environmental

Management System. *Sustainability, 14*(21), 14290.

Ghaderi, Farzad, Pakmaram, Asgar, Ghalibaf Asl, H., & Bahri Sales, Jamal. (2015). Developing the Concept of Accounting Constructs of Sustainability and Financial Health of Companies in the Iranian Capital Market. *Journal of Management Accounting, 14*(48), 87-102.

Habib, N., & Samuel, A. (2022). Accounting for sustainability: A case study approach. *Sustainability Reporting, 10*(9), 1090–1105.

Hahn, R., & Reimsbach, D. (2014). Are we on track with sustainability literacy? A viewpoint on the influence of sustainability and accounting on future managers' processing of sustainability information. *Journal of Global Responsibility, 5*(1), 55–67.

Hosseini, Seyed Ali, & Ebrahimi, Farheh. (2015). Corporate Sustainability Performance and Systematic Risk. *Accounting and Social Interests, 13*(2), 61-84.

Irafahmi, D. T., Nuris, D. M., Zahroh, F., & Nagari, P. M. (2018). Critical Thinking in Accounting Textbooks. *Journal of Education and Learning, 12*(1), 21–29.

Joshi, S., & Li, Y. (2016). What Is Corporate Sustainability, and How Do Firms Practice It? *Journal of Management Accounting Research, 28*(2), 1–11.

Karmsahhi, Behnam. (2021). The Effect of Management Accounting Procedures on Corporate Sustainability: The Role of the Moderating Variable of Organizational Characteristics. *Audit Knowledge, 23*(91), 68-96.

Lee, W. E., Birkey, R. N., & Patten, D. M. (2017). Exposing Students to Environmental Sustainability in Accounting: An Analysis of Its Impacts in a US Setting. *Social and Environmental Accountability Journal, 37*(29), 81–96.

Maas, K., Schaltegger, S., & Crutzen, N. (2016). Integrating corporate sustainability assessment, management accounting, control, and reporting. *Journal of Cleaner Production, 136*, 237-248.

Maas, K., Schaltegger, S., & Crutzen, N. (2016). Integrating corporate sustainability assessment, management accounting, control, and reporting. *Journal of Cleaner Production, 136*, 237–248.

Mburayi, L. & Wall, T. (2018). Sustainability in the professional accounting and finance curriculum: An exploration. *Higher Education, 8*(3), 291–311.

Nassereddine, H., & Ahmad, A. S. (2019). The role of management accounting systems in sustainable development strategies. *In Proceedings of the International Conference on Business Excellence (Vol. 13, No. 1, pp. 313-325)*.

Petersen, H., Lühn, M., Nuzum, A.-K., Schaltegger, S., & Wenzig, J. (2021). Controller als Partner im Nachhaltigkeits-Management. *Controlling & Management Review, 65*(3), 8–14.

Rahnamai Rudposhti, Fereydoon, & Homayouni Rad, Raheleh. (2015). Corporate Sustainability Performance and Systematic Risk. *Accounting and Social Interests, 13*(2), 61-84.

Rahnamai Rudpeshi, Fereydoon, Bani Mahd, Bahman, & Mirsaeedi, Seyed Jafar. (2014). Modernity and Management Accounting. *Journal of Management Accounting and Auditing Knowledge, 3*(12), 1-12.

Rezaei, Shoaib. (2022). A Review of the Thematic Literature on Sustainability/Corporate Social Responsibility in Management Accounting. *Journal of Applied Research in Management and Accounting, 5*(17), 111-131.

Samie, Rojan & Jamei, Reza. (2018). Investigating the Relationship between Voluntary Disclosure of Non-Financial Information and Sustainable Performance in Companies Listed on the Tehran Stock Exchange. *Master's Thesis in Accounting, University of Kurdistan Campus*.

Schaltegger, S., Christ, K. L., Wenzig, J., & Burritt, R. (2022). Corporate sustainability management accounting and multi-level links for sustainability—a systematic review. *International Journal of Management Reviews, 24*(4), 480–500.

Schaltegger, S., Horisch, J., & Freeman, R. E. (2019). The business case for sustainability: A stakeholder theory perspective. *Organization & Environment, 32*(3), 191–212.

Sharma, U., & Kelly, M. (2015). The changing role of accounting education and Management Control systems in the age of sustainability. *International Journal of Critical Accounting, 7*(3), 289–303.

Starik, M., & Kanashiro, P. (2013). Towards a theory of sustainability management: Uncovering and integrating the nearly obvious. *Organization & Environment, 26*(1), 7–30.

Vanini, U., & Bochert, S. (2024). Integration of sustainability issues into management accounting textbooks. *Journal of Accounting Education, 66*, 100886.

Wynder, M., Wellner, K.-U., & Reinhard, K. (2013). Rhetoric or reality? Do accounting education and experience increase weighting on environmental performance in a balanced scorecard? *Accounting Education, 22*(4), 366–381.

Zvezdov, D., & Schaltegger, S. (2018). Sustainability and Accounting Education. *Accounting and Sustainability, 16*(2), 123–140.

Zvezdov, D., & Schaltegger, S. (2019). Sustainability performance and managerial accounting. *Journal of Business Ethics, 156*, 131-152.

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The Effect of the Corporate Governance System on the Earnings Management

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Abstract

Objectives: This study examines the impact of a firm's management system—measured through the board of directors' characteristics, audit committee attributes, and corporate ownership structure—on earnings management in business entities.

Methodology/Design/Approach: The research analyzes data from 167 firms listed on the Tehran Stock Exchange over 10 years (2013–2022) using linear regression modeling.

Findings: The results indicate that among board characteristics, board size has a negative effect on earnings management, while CEO tenure has a direct and significant impact. However, the effects of board independence and CEO duality were not supported. Regarding the audit committee, expertise was found to have a significant negative effect on earnings management, whereas no relationship was observed between audit committee size and independence. Lastly, within the ownership structure, only institutional ownership exhibited a direct and significant influence on earnings management, while the effects of ownership concentration and managerial ownership were not confirmed.

Innovation: This study reinforces the theoretical perspective that corporate governance mechanisms and management systems serve as critical tools for overseeing financial reporting processes. The findings contribute to the ongoing discourse on the role of governance structures in mitigating earnings management practices.

Keywords: Earnings management, Corporate governance, Board of directors, Ownership, Audit Committee.

1. Introduction

In accounting literature, earnings management is defined as the deliberate manipulation of a firm's financial performance by internal parties (particularly management) to mislead stakeholders and capital market participants. This practice can significantly impact a firm's future performance. Scholars view earnings management as a set of decisions aimed at maximizing reported earnings, often at the expense of faithfully representing a firm's short-term economic realities (Fraud et al., 2020).

Given the separation of ownership from management, the absence of a comprehensive theoretical framework despite established accounting standards, conflicts of interest, and the exclusive access of managers to certain financial information, there exists a potential for earnings manipulation and misleading financial reporting. In fact, within the boundaries of legal and accounting regulations, managers may manipulate earnings to enhance their firms' value, with accrual-based items being more susceptible to such manipulation than cash-based items (Al-Diri et al., 2020).

To mitigate this undesirable phenomenon and align the interests of various stakeholders, the concept of corporate governance has been introduced. Corporate governance encompasses a set of rules, processes, cultural norms, and relationships that must exist among shareholders, managers, and auditors to ensure the protection of shareholders' rights, prevent potential abuses, and achieve transparency, accountability, and fairness. Firms with robust corporate governance structures generally experience fewer conflicts of interest and their associated consequences.

According to Hu et al. (2015), firms with weaker financial performance exhibit a stronger motivation to engage in earnings management. Conversely, firms with strong financial performance are less likely to artificially inflate their earnings. Firms reporting lower operational cash flows due to poor financial performance are often perceived negatively by investors. In response, managers may manipulate earnings to boost stock prices, present a favorable corporate image, increase executive compensation, and ultimately reduce the political costs associated with underperformance (Choy, 2012). Thus, earnings management is sometimes employed as a tool to portray a favorable position. At the same time, financial performance measurement has become a critical concern for organizations, as it serves as the foundation for numerous internal and external decisions, including investment, capital expansion, and governance-related choices (Vakili Fard, 2015).

Recognizing the necessity of addressing earnings management and aligning the interests of diverse stakeholders, corporate governance has emerged as a fundamental mechanism to ensure managerial oversight, enforce regular audits, and protect the rights of investors and other stakeholders. Corporate governance determines how firms are managed, who governs them, and the processes for reporting and disseminating financial information to stakeholders. By clarifying these principles, this study aims to offer effective strategies for improving corporate resource management and enhancing firm value. Given that publicly traded firms are subject to scrutiny by real shareholders and are required to maintain high levels of transparency, firms listed on the stock exchange have been selected as the study population.

2 Literature review and development of hypothesis

2.1 Earnings Management

Earnings management, as a concept in accounting literature, is difficult to define clearly due to the ambiguous boundary between earnings management and financial fraud. However, a distinction is made between fraudulent activities and legitimate judgments and estimates that are within the framework of accepted accounting principles, which can be employed for legitimate earnings management (Zalaghi & Gadami Mashor, 2017).

Earnings management is generally viewed as a practice in which reported earnings reflect management's preferences rather than the firm's actual

financial performance (Iqbal & Strong, 2010). It is also defined as a targeted intervention in the financial reporting process to obtain personal benefits. These definitions emphasize the opportunistic aspect of earnings management, suggesting that managers, driven by profit-seeking motives, manipulate earnings, thereby reducing the informational content of accounting numbers.

Conversely, some scholars view earnings management more positively, defining it as the manipulation of profit numbers through which management's private information about future performance is communicated to investors. In this perspective, while earnings management might reduce the informational content of profit numbers, it could also help investors interpret reported figures more effectively. However, the opportunistic view of earnings management remains more widely accepted in the literature (Jiraporan et al., 2008).

Thus, earnings management occurs when managers use judgment in financial reporting and transactions, altering financial reports in a way that misleads stakeholders about the firm's economic performance or affects the outcomes of contracts reliant on financial figures. Unlike fraud, earnings management involves the selection of accounting procedures and estimates that comply with accepted accounting principles (Ebaid, 2012).

Early studies on earnings management highlight that incentives for such practices often stem from agency problems and information asymmetry (Davidson et al., 2005). Managers may exploit information asymmetry between domestic and foreign investors to obscure true financial performance, using earnings management to increase their rewards and secure their positions (Healy & Wallen, 1999). From an agency theory perspective, corporate governance is a key control mechanism, as it supervises management and holds decision-making power. Internal corporate governance mechanisms are thus expected to limit managerial actions intended to manipulate earnings (Feng & Huang, 2021).

2.2 Corporate Governance

The importance of protecting public interest, respecting shareholders' rights, promoting information transparency, and obligating firms to fulfill their social responsibilities has gained prominence over the past decade (Salehi Kardabadi & Yousefi, 2016). Achieving these ideals requires strong standards and effective implementation mechanisms, with corporate governance systems playing a central role. The primary goal of corporate governance is to ensure the long-term survival of firms, safeguard shareholders' interests against managers, and prevent the unjust transfer of wealth among groups (Ghodrati & Faizi, 2015).

Corporate governance encompasses decision-making structures, accountability, and behavior within organizations, aiming to strike a balance between management autonomy, accountability, and stakeholder interests (Mahdavi Parsa & Noor Ahmadi, 2018). It seeks to reduce agency problems, align the interests of owners and managers, and secure the interests of all stakeholders. Therefore, it is expected that the characteristics of a governance system will influence financial performance, as effective governance reduces the negative consequences of conflicts of interest, such as the abuse of power (Abdulwahid et al., 2021). Common corporate governance mechanisms include institutional ownership, ownership concentration, managerial ownership, audit committee size, audit committee independence, audit committee expertise, CEO tenure, board independence, board size, and CEO duality.

2.3 Characteristics of the Board

The board of directors is a critical element of corporate governance, tasked with monitoring management performance. Important characteristics of the board include its size, independence, CEO duality, and CEO tenure.

- **Board Size**: From an agency theory perspective, a larger board is more likely to be sensitive to agency problems, as it provides more oversight of management. Larger boards

tend to include more independent members with valuable expertise, which can reduce the likelihood of opportunistic behavior, including earnings management. Additionally, larger boards are more likely to delegate responsibilities to committees.

- **Independence of the Board**: Board independence is essential for effective management. Non-executive directors help balance the power within the board and prevent domination by any single group. This structure minimizes conflicts of interest between managers and stakeholders (Bannister & West, 2001).
- **CEO Tenure**: The CEO's tenure influences the board's supervisory role. A long tenure can strengthen the CEO's position and reduce the board's ability to supervise effectively. In such cases, the CEO may act less in the interests of shareholders, potentially increasing opportunistic behavior (Ebrahim, 2004). Some governance experts argue that a short CEO tenure may encourage opportunistic behavior for personal benefit (Brockman & Tystel, 2009).
- **CEO Duality**: CEO duality occurs when the CEO also serves as the chairman of the board, granting them more control and potentially limiting the board's ability to effectively monitor the firm.

Hypotheses Formulation: Based on the above discussion, the following hypotheses are proposed:

- **H1**: The independence of the board of directors has a significant effect on earnings management.
- **H2**: The size of the board of directors has a significant effect on earnings management.
- **H3**: The dual role of the CEO has a significant impact on earnings management.
- **H4**: The CEO's tenure has a significant effect on earnings management.

2.4 Characteristics of Ownership Structure

The ownership structure plays a crucial role in corporate governance and includes institutional ownership, managerial ownership, and ownership concentration.

- **Institutional Ownership**: Institutional investors, such as banks, insurance firms, and financial institutions, monitor firms by collecting information about management decisions and actively overseeing operations (Kanagartnam et al., 2004). Their involvement tends to reduce opportunistic behavior by management, leading to better firm performance and fewer earnings management.
- **Ownership Concentration**: High ownership concentration among large shareholders provides incentives for more effective monitoring of management. Concentrated ownership aligns shareholder interests with management, as large shareholders are more motivated to monitor firm activities (Aghaie Eskoei & Maleki, 2014).
- **Managerial Ownership**: Managerial ownership refers to the percentage of shares held by firm managers. Higher levels of managerial ownership can reduce conflicts of interest between managers and shareholders (Jensen et al., 1976).

Hypotheses Formulation: The following hypotheses are proposed based on the ownership structure:

- **H5**: Ownership concentration (major shareholders) has a significant effect on earnings management.
- **H6**: Institutional ownership (institutional shareholders) has a significant effect on earnings management.
- **H7**: Managerial ownership has a significant effect on earnings management.

2.5 Characteristics of the Audit Committee

The audit committee is an essential component of corporate governance. Key characteristics include the size, independence, and expertise of the committee.

- **Audit Committee Size**: While there is no ideal size for the audit committee, previous studies suggest that it should consist of three to five members, with a majority of independent directors (Abbott et al., 2004). Larger committees may face challenges in decision-making and coordination, potentially weakening their monitoring function (Soltana et al., 2014).
- **Independence of the Audit Committee**: The audit committee's effectiveness is tied to its independence. Independent members from outside the organization are better equipped to oversee financial reporting and ensure transparency (Lari Dasht Bayaz & Oradi, 2015).
- **Expertise of the Audit Committee**: Expertise is crucial for the audit committee, particularly in analyzing financial statements and understanding internal controls. A lack of financial expertise increases the likelihood of errors and fraud (Abbott et al., 2002).

Hypotheses Formulation: Based on the audit committee characteristics, the following hypotheses are formulated:

- **H8**: The size of the audit committee has a significant effect on earnings management.
- **H9**: The independence of the audit committee has a significant effect on earnings management.
- **H10**: The expertise of the audit committee has a significant effect on earnings management.

2.6. Background

A significant body of internal and external research has explored the relationship between various corporate governance indicators and earnings management. Several studies have found that institutional ownership and board independence are inversely related to earnings management. Aghaei and Chalaki (2008) confirmed this relationship, showing that these factors reduce earnings management. Baghbani and Pourghaffar Dastjerdi (2014), however, observed a direct relationship between CEO duality and earnings management, while no significant connection was found between the size or independence of the board and earnings management.

Shams et al. (2016) also contributed to this area of research, finding that a higher proportion of non-executive board members and the presence of expert auditors in the industry help reduce earnings management. Nakhai and Ahmadnejad (2020) expanded this understanding by revealing a significant relationship between board size, managerial ownership, institutional ownership, and family ownership with earnings management. Notably, they identified a reversed effect of internal managerial ownership, board size, institutional ownership, and family ownership on earnings management.

Further research by Ghaemi et al. (2019) confirmed a negative and significant relationship between audit committee expertise and earnings management. Similarly, Tajvidi and Ghaempanah (2021) concluded that the participation of financial experts in the audit committee, along with greater independence and size of the audit committee, significantly reduces earnings management.

In more recent studies, Mohaghegh and Formahini Farahani (2023) identified a negative and significant relationship between board dynamics and earnings management, particularly concerning the management of actual and accrued profits. Jeiran Asia and Ghayour (2023) found that institutional and managerial ownership has a negative effect on earnings management, while corporate ownership exhibits a positive and significant impact.

Kirana et al. (2020) presented evidence that board size positively influences earnings management, while Surjandari et al. (2021) noted that specific corporate

governance characteristics, such as board independence, institutional ownership, and the frequency of board meetings, positively affect earnings management. Varnamkhasti (2022) similarly confirmed that board independence, CEO duality, and the number of board meetings correlate positively with earnings management.

Sirait et al. (2022) found that robust corporate governance mechanisms, such as managerial ownership, institutional ownership, and the financial expertise of the audit committee, all play significant roles in earnings management. Chatterjee and Rakshit (2023) documented a strong negative relationship between earnings management and the percentage of independent directors on the board, highlighting the importance of board member accuracy.

Nguyen et al. (2024) added nuance to this discussion by illustrating that quality corporate governance has a stronger negative impact on earnings management in private firms, firms with high foreign ownership, low concentrated ownership, and high-growth firms. Finally, the study by Bashir et al. (2024) reinforced the role of institutional investors in limiting earnings management, also highlighting the influence of board size and ownership concentration.

These studies indicate that various corporate governance characteristics, including board structure, ownership types, and audit committee attributes, significantly influence earnings management, with mixed results in terms of the direction and strength of these relationships across different contexts.

3. Data and Methodology

This research is classified as practical research based on its purpose, and its findings are intended to benefit a broad range of stakeholders, including firm managers, shareholders, investors, lenders, researchers, and standards developers. The research is also a descriptive and correlational type of causal (post-event) study.

3.1 Data and Sample Collection

The statistical population of this research comprises all firms listed on the Tehran Stock Exchange. Given the large size of the population and the potential inconsistencies among its members, specific criteria were applied to select a more focused sample for analysis. The period of analysis spans from 2013 to 2022, and due to the limited number of manufacturing firms on the Tehran Stock Exchange that meet the applied criteria, the available population was selected in its entirety to maximize the number of observations for statistical analysis.

The following conditions were used to define the sample:

- To increase comparability, the financial year of the firms should end at the end of March.
- Firms that changed their financial year during the study period were excluded.
- Only firms that were listed on the stock market before 2013 were considered.
- Banks, financial intermediaries, leasing firms, holding firms, and investment firms were excluded due to the specific nature and activities of these organizations.
- The financial information of the firms must be available to extract the required data.

Based on these criteria, 167 firms were selected, and their financial data was gathered from the Codal website.

Additionally, this research is library-based in terms of data collection methods. Theoretical foundations were gathered from Persian books, journals, articles, and specialized theses in the fields of finance and accounting. Data was also obtained from archives, audit records, reports, financial statements, and related notes from firms, which were sourced from the Tehran Stock Exchange (Codal website). The research employed multivariate regression analysis as the statistical method, and relationships between the variables were examined using Eviews version 10 software.

3.2 Methodology

3.2.1 Research design (Empirical model)

The desired regression model to test the hypotheses in this research is based on the study of Nguyen et al. (2024). The model is specified as follows:

$$\begin{aligned} AbcDAC_{i,t} = \alpha &+ \beta_1 B\_IND_{i,t} + \beta_2 B\_SIZE_{i,t} \\ &+ \beta_3 CEO\_DUALITY_{i,t} \\ &+ \beta_4 TENURE_{i,t} \\ &+ 6\beta_5 OWN\_CON_{i,t} \\ &+ \beta_7 INS\_OWN_{i,t} \\ &+ \beta_7 MAN\_OWN_{i,t} \\ &+ \beta_8 AC\_SIZE_{i,t} + \beta_9 AC\_IND_{i,t} \\ &+ \beta_{10} AC\_EXP_{i,t} \\ &+ \sum_{j=1}^{10} \beta_j Control\ Variables_{i,t} \\ &+ \varepsilon_{i,t} \end{aligned}$$

3.2.2 Measurement of variables

dependent variable: Earnings management (AbsDAC)- In this research, earnings management is used through the adjusted model of Jones (1991) presented by Dechow et al. (1995) and in other studies such as Teo et al. (1998) and Xie et al. (2003) to determine Earnings management (discretionary accruals) used are measured. The modified Jones model presented by Dechow et al. (1995) is very powerful among the various models presented for measuring earnings management (Lobo and Zhou, 2001).

To measure earnings management, first, the total accruals for each of the sample firms in each year are calculated as follows:

$$TotalAccruals_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it}) - Dep_{it}$$

In the above equation, ΔCA represents the change in current assets; $\Delta Cash$ represents the change in cash and cash equivalent; ΔCL represents the change in total current liabilities; ΔSTD represents the change in the current share of long-term debts; Dep represents depreciation costs of tangible and intangible assets.

The adjusted model of Jones (1991) based on cross-sectional data (or time series data) is used to estimate non-discretionary accruals and total accruals. The following model is suitable for total accruals.

$$\frac{TAc_{it}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{\Delta REV_{it}}{A_{i,t-1}} + \beta_2 \frac{PPE_{it}}{A_{i,t-1}} + \varepsilon_{it}$$

For each year and industry, total accruals (TAC) are adjusted based on changes in sales revenues (ΔREV) and gross property, plant, and equipment (PPE). To solve the problem of heterogeneity of variance, all variables are scaled by total assets at the beginning of the year (A). Using regression parameter estimates ($\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2$), each sample firm's nondiscretionary accruals (NDCA) are estimated by adjusting the change in revenues by the change in accounts receivable (ΔAR).

It is possible that the firms could have manipulated the sales by changing the credit conditions (Dechow et al., 1995). The regression parameters obtained from model 2 are used in model 3 to obtain optional accrual items.

$$NDAC_{it} = \hat{\beta}_0 + \hat{\beta}_1 \frac{\Delta REV_{it} - \Delta AR_{it}}{A_{i,t-1}} + \hat{\beta}_2 \frac{PPE_{it}}{A_{i,t-1}}$$

By estimating non-discretionary accruals from equation 2, the amount of discretionary accruals for firm i in industry j in year t is calculated as the remainder of equation 4:

$$DAC_{it} = \frac{TAC_{i,t}}{A_{i,t-1}} - NDAC_{i,t}$$

According to past research, the absolute value of discretionary accruals (Abs(DAC)) has been used as a measure for earnings management. All the variables of the profit management model are divided by the total assets at the beginning of the period in order to solve the heteroscedasticity.

Independent Variables

Corporate Governance:

Corporate governance refers to a set of mechanisms that protect investors from opportunistic behavior (Shleifer & Vishny, 1997; Gillan, 2006). These mechanisms can be either internal or external. The corporate governance mechanisms used in this research are defined as follows:

Indicators of Board Characteristics:

- **Board Independence (B_IND):** The proportion of non-executive (independent) board members, calculated as the number of independent members divided by the total number of board members.
- **Board Size (B_SIZE):** The total number of board members.
- **CEO Duality (CEO_DUALITY):** A binary variable, equal to 1 if the CEO is also the chairman or vice-chairman of the board and 0 otherwise.
- **CEO Tenure (TENURE):** The natural logarithm of the CEO's tenure on the board of directors.

Indicators of Ownership Characteristics:

- **Ownership Concentration (OWN_CON):** The percentage of firm shares held by shareholders who own at least 5% of the firm's shares.
- **Institutional Ownership (INS_OWN):** The percentage of firm shares owned by banks, insurance firms, financial institutions, holding firms, organizations, institutions, and government entities.
- **Management Ownership (MAN_OWN):** The percentage of firm shares owned by the firm's managers.

Indicators of Audit Committee Characteristics:

- **Audit Committee Size (AC_SIZE):** The total number of members in the firm's audit committee.
- **Audit Committee Independence (AC_IND):** The ratio of independent members to the total number of members in the audit committee.
- **Audit Committee Expertise (AC_EXP):** The ratio of members with accounting or auditing qualifications to the total number of members in the audit committee.

Control Variables

The specific characteristics of the firm that could affect earnings management are considered control variables, including firm size, profitability, capital structure, liquidity, and firm age. These control variables include:

- **Firm Size (F_SIZE):** The natural logarithm of the firm's total assets.
- **Return on Assets (ROA):** The net profit divided by the average total assets of the firm.
- **Financial Leverage (F_LEV):** The total liabilities divided by the firm's total assets.
- **Firm Age (AGE):** The natural logarithm of the number of years since the firm's establishment up to the study period.
- **Market to Book Value (MTB):** The market value of the firm's stock divided by its book value.
- **Cumulative Cash Flow (CFO):** The cash flow from operating activities divided by the total assets at the beginning of the firm's period.
- **Loss (LOSS):** A binary variable, equal to 1 if the firm has incurred a loss and 0 otherwise.
- **Sales Growth (SALE_GROWTH):** The percentage growth in the firm's sales for the current year.

Auditor Type (BIG): A binary variable, equal to 1 if the firm's audit is conducted by a major auditing organization and 0 otherwise. Additionally, fixed effects for year and industry are included as control variables.

4. Empirical results

4.1 Description statistics

To examine the general characteristics of the variables and conduct a detailed analysis, it is essential to review the descriptive statistics of the variables. Table 1 presents the descriptive statistics for the data of the variables used in this research. These descriptive statistics are based on 167 sample firms over a period of 10 years (2013 to 2022).

The mean value for earnings management is 0.003, suggesting that most of the data are concentrated on this point. The minimum and maximum values for earnings management are -1.005 and 0.98, respectively. The mean board independence is 0.66, indicating that approximately 66% of the board members in the sample firms during the study period are non-executive members. The mean board size is 5.02, reflecting that most boards consist of 5 members. The mean value of 0.99 for CEO duality indicates that nearly 99% of the CEOs also serve as the chairman or vice-chairman of the board of directors. The mean CEO tenure is 3.76, suggesting that CEOs typically change every 4 years.

Regarding the ownership structure, the results show that approximately 55% of the shares are held by major shareholders, 55% by institutional shareholders, and 59% by managers. Concerning the audit committee, the results indicate that the average number of audit committee members in the sample is approximately 3. Additionally, about 66% of the members possess financial expertise, and 66% are independent members.

Table 1: Descriptive statistics of the variables

Variable	Mean	Median	Maximum	Minimum	S.D
AbsDAC	0.003	-0.01	0.98	-1.005	0.17
BIND	0.66	0.60	1.00	0.00	0.19
BSIZE	5.02	0.50	7.00	5.00	0.21
DUALITY	0.99	1.00	1.00	0.00	0.09
TENURE	3.76	2.00	21.00	1.00	3.66
OWNCON	0.55	1.00	1.00	0.00	0.50
MANOWN	58.88	66.00	99.05	0.00	26.45
INSOWN	54.67	64.00	99.92	0.00	31.78
ACEXP	0.66	0.67	1.00	0.00	0.32
ACSIZE	2.88	3.00	6.00	0.00	0.98
ACIND	0.66	0.67	1.00	0.00	0.28
FSIZE	14.92	14.64	21.57	1.053	1.72
ROA	0.13	0.11	0.68	-1.06	0.17
FLEV	0.58	0.57	4.003	0.03	0.30
MTB	5.04	3.27	227.68	-862.99	24.19
LOSS	0.11	0.00	1.00	0.00	0.32
AGE	2.97	2.996	4.01	1.79	0.39
BIG	0.17	0.00	1.00	0.00	0.37
SALE_GROWTH	0.44	0.32	43.49	-0.97	1.29
CFO	0.11	0.09	0.69	-1.31	0.14

4.2 Inferential statistics

Limber (Chow) and Hausman F test

Limer's F test indicates that, at the 5% significance level, the panel regression method should be used if the p-value is less than 0.05, as opposed to the pooling regression method. Additionally, the appropriate model between fixed effects and random effects should be selected using the Hausman test. If the significance level is below 5%, the fixed effects model is preferred, while if the significance level is above 5%, the random effects model is deemed more appropriate. The results of Limer's and Hausman's F tests are presented in Table 2.

The results of Limer's (Chow) F test presented in Table 2 indicate that the hypothesis of having the same intercept for all the studied firms is rejected at the 5% significance level. Therefore, the panel data method can be used to estimate the model. Additionally, the results show that the null hypothesis of selecting the random effects method for model estimation is rejected at the 5% significance level. Consequently, the fixed effects method is appropriate for estimating the models.

Table 2: The results of Leimer (Chow) and Hausman's F test

Fixed Effects Tests	Statistic	Prob/	Hausman Test	Chi-Sq/ Statistic	Prob
Adoption of tabular data pattern	3.49	0.00	Adopting fixed width effects from the origin	99.48	0.00

Correlation Coefficients

One potential issue in regression analysis is the presence of strong collinearity between independent variables in the model. Most researchers believe that there is no definitive solution to the collinearity problem, and the best approach to ensure the absence of strong collinearity between explanatory variables is to check the Pearson correlation coefficients. To address this, the Pearson correlation coefficient test has been conducted for all explanatory variables in the regression model.

Additionally, another test for detecting multicollinearity is the Variance Inflation Factor (VIF) test, which helps assess the degree of multicollinearity. In this test, a VIF value greater than 5 indicates a potential multicollinearity problem between the variables.

The results of the correlation coefficients are presented in Table 3, along with the results of the VIF test and hypothesis testing.

As shown, the correlation coefficients between both variables in the research are smaller than 0/7, which confirms the absence of multicollinearity.

Table 3: Pearson correlation matrix

Variable	bind	Bsize	duality	tenure	owncon	insown	manown	acsize	acind	acexp	fsize
bind	1.00										
Bsize	0.13	1.00									
duality	-0.04	0.01	1.00								
tenure	0.04	-0.02	-0.05	1.00							
owncon	0.06	-0.07	-0.06	0.05	1.00						
insown	-0.05	-0.10	-0.06	-0.05	0.47	1.00					
manown	0.01	-0.08	-0.04	-0.02	0.57	0.67	1.00				
acsize	-0.04	0.02	-0.05	-0.06	0.05	0.13	0.004	1.00			

Variable	bind	Bsize	duality	tenure	owncon	insown	manown	acsize	acind	acexp	fsize
acind	-0.07	0.06	-0.03	-0.06	0.01	0.02	-0.04	0.38	1.00		
acexp	-0.01	0.02	0.03	-0.07	0.13	0.04	0.06	0.30	0.22	1.00	
fsize	-0.12	0.03	-0.11	-0.05	0.09	0.15	0.03	0.32	0.18	0.08	1.00
roa	0.12	0.03	0.01	0.09	0.11	0.05	0.04	0.16	0.08	0.10	0.22
flev	-0.22	-0.07	-0.06	-0.13	0.11	0.20	0.17	-0.08	-0.01	-0.03	-0.01
Mtb	0.001	-0.06	-0.01	-0.06	0.01	0.02	0.02	0.10	0.07	0.07	0.04
loss	-0.14	-0.02	0.01	-0.13	-0.13	-0.06	-0.07	-0.04	-0.01	-0.03	-0.09
age	-0.15	-0.04	0.09	-0.04	-0.15	-0.21	-0.15	0.03	-0.01	0.01	0.21
big	-0.20	-0.03	0.03	-0.11	0.04	0.14	0.11	0.004	0.07	-0.02	0.33
sale_growth	-0.07	-0.03	-0.02	0.02	-0.31	-0.08	0.11	0.10	0.08	0.04	0.26
cfo	0.08	0.02	0.05	0.06	0.15	0.15	0.11	0.10	0.04	0.08	0.07

Continued Table 3: Pearson correlation matrix

Variable	roa	flev	mtb	loss	age	big	sale_growth	cfo
Roa	1.00							
flev	0.59	1.00						
mtb	0.36	0.02	1.00					
loss	0.55	0.34	0.17	1.00				
age	0.05	-0.01	0.17	0.02	1.00			
big	0.08	0.20	-0.09	0.09	0.04	1.00		
sale_growth	0.35	-0.16	0.33	-0.20	0.17	-0.04	1.00	
cfo	0.44	-0.20	0.09	-0.20	-0.07	-0.04	0.06	1.00

4.3 Multiple liner regression results

The results of the estimation of the research model to check the hypotheses are described in the following table:

The results in Table 4 indicate that, based on the F statistic and its significance level (which is less than the critical value of 0.05), the regression model is statistically significant and acceptable. Furthermore, the R-squared value of 0.80 in the model suggests that the independent and control variables explain approximately 80% of the variation in the dependent variable (earnings management). Additionally, the Durbin-Watson statistic falls within the range of 1.5 to 2.5, indicating that there is no autocorrelation in the model. The collinearity test results show that all independent and control variables have a Variance Inflation Factor (VIF) less than 5, implying that there is no multicollinearity problem in the model.

Regarding the relationship between board characteristics and earnings management, the results indicate that the board size and CEO tenure significantly affect earnings management, as the significance level of their t-statistics is less than 0.05. Specifically, board size has a negative effect (-0.03) and CEO tenure has a positive effect. This implies that larger board sizes and shorter CEO tenures are associated with lower levels of earnings management. However, the significance levels for board independence and CEO duality are greater than 0.05, meaning that these variables do not significantly influence earnings management. Therefore, the second and fourth hypotheses are confirmed, while the first and third hypotheses are rejected.

In terms of the impact of ownership characteristics and ownership structure on earnings management, the results show that among the ownership structure indicators, only institutional ownership has a

significant effect on earnings management, with a significance level of less than 0.05. The impact coefficient for institutional ownership (0.001) is positive and direct, indicating that higher institutional ownership is associated with greater earnings management. However, the significance levels for ownership concentration and managerial ownership are greater than 0.05, suggesting that these variables do not have a significant effect on earnings management. Consequently, the sixth hypothesis is confirmed, while the fifth and seventh hypotheses are rejected.

Finally, the results related to the influence of audit committee characteristics on earnings management indicate that only the audit committee's expertise has a significant effect, with a probability level lower than 0.05. The coefficient for audit committee expertise (-0.01) is negative and inverse, indicating that greater expertise within the audit committee is associated with lower levels of earnings management. However, the significance levels for the size and independence of the audit committee are greater than 0.05, meaning these factors do not significantly impact earnings management. Therefore, the tenth hypothesis is confirmed, while the eighth and ninth hypotheses are rejected.

Moreover, the results reveal that among the control variables, firm size, return on assets, loss, auditor type, and operating cash flow have significant effects on earnings management, while financial leverage, market-to-book ratio, age, and sales growth do not.

Table 4: The results of the research hypothesis test

dependent variable	independent variable	Coefficient	Std/ Error	t-Statistic	Prob	test result	VIF
AbsDAC	BIND	0.007	0.01	0.49	0.63	Rejection	2.44
	BSIZE	-0.03	0.01	-2.46	0.01	Acceptance	3.17
	DUALITY	-0.02	0.02	-0.67	0.50	Rejection	2.39
	TENURE	0.002	0.001	3.43	0.001	Acceptance	2.45
	OWNCON	-0.006	0.006	-1.08	0.28	Rejection	3.60
	INSOWN	0.001	0.0002	2.54	0.01	Acceptance	3.46
	MANOWN	0.002	0.001	1.62	0.10	Rejection	1.44
	ACSIZE	0.003	0.003	1.00	0.32	Rejection	3.37
	ACIND	0.005	0.1	0.53	0.60	Rejection	3.05
	ACEXP	-0.01	0.007	-2.16	0.03	Acceptance	2.76
	FSIZE	0.007	0.003	-2.12	0.03	Acceptance	2.86
	ROA	1.04	0.02	42.09	0.00	Acceptance	4.14
	FLEV	0.03	0.02	1.90	0.058	Rejection	4.32
	MTB	0.00002	0.00005	0.44	0.66	Rejection	1.14
	LOSS	0.02	0.006	3.37	0.001	Acceptance	2.02
	AGE	-0.02	0.01	-1.71	0.09	Rejection	3.29
	BIG	0.04	0.01	3.99	0.0001	Acceptance	1.26
	SALE_GROWTH	-0.001	0.0006	-1.51	0.13	Rejection	1.18
	CFO	1.23	0.02	56.82	0.00	Acceptance	1.91
	Width from the origin	0.027	0.08	3.19	0.001	Acceptance	
F-statistic (Prob) = 33.04 (0.00) Durbin Watson Statistics = 1.71				R-squared = 0.80 Adjusted R-squared = 0.78			

5. Conclusion, implication, suggestion, and limitation

This study aims to investigate the effect of the corporate governance system on earnings management for firms listed on the Tehran Stock Exchange in the years 2013 to 2022 using a multivariable linear regression method. The management system of the firm was considered through the characteristics of the board of directors, ownership structure, and the characteristics of the audit committee, while earnings management was measured through discretionary accrual items of the modified Jones model (1991).

In general, the findings indicate the impact of corporate governance system indicators on earnings management. In the dimension of board characteristics, the results show the negative and inverse effects of board size and the positive and direct effect of CEO tenure on earnings management. In other words, the results confirmed the second and fourth hypotheses and rejected the first and third hypotheses. Regarding the negative and inverse effect of board size, it can be stated that the more the number of board members, the more their power will increase, and due to their larger number, there will be more supervision over the managers.

Also, the tenure of the CEO may increase the management power and influence of the CEO, and controlling the board of directors reduces their supervisory ability, which in turn causes the managers to act in their own interests. In other words, the long tenure of the CEO will strengthen his position and increase his power, and the motivation for opportunistic behavior will also increase. These results are in line with the studies of Ebrahim (2004) and Brookman and Thistle (2009).

Also, in the structural dimension of ownership, the findings of this research confirmed the sixth hypothesis and rejected the fifth and seventh hypotheses. In other words, contrary to expectations, the results confirm that institutional ownership has a positive and direct effect on earnings management. In this regard, it can be stated that job security concerns as a result of institutional shareholder pressures on managers cause management to focus on short-term results, which in turn causes earnings manipulation to better show the firm's status and performance. These results are in contrast with the studies of Vaez et al. (2013), Kanagaretnam et al. (2004), and Bannister and Wiest (2001).

Finally, about the characteristics of the audit committee and earnings management, the results show that the 10th hypothesis regarding the effect of the expertise of the audit committee on earnings management is confirmed and the 8th and 9th hypotheses regarding the effect of the size of the audit committee and the independence of the audit committee are also rejected. In other words, the results show that the expertise of the audit committee has led to more monitoring of the behavior of managers and financial reporting of the firm, which can increase the quality of financial reporting and prevent the opportunistic behavior of managers. These results are in line with the studies of Abbott et al. (2002) and Tajvidi and Ghaempanah (2021).

According to the obtained results, suggestions are also presented in the field of corporate governance and earnings management. It is suggested that the compilers and legislators provide the conditions that firms are required to disclose more information about the management and governance system of the firm. Also, investors and analysts are suggested to pay more attention to the management system of the firms, especially the number of members, the tenure of the CEO, the number of shares of the firm's institutional shareholders, and the expertise of the audit committee, and in this way, get more quality information from the firms. In addition, it is suggested that the lenders should pay attention to the fact that the earnings declared by the firms with expert auditors, fewer institutional shareholders, more board members, and tenured CEOs at the time of the decision to grant credit to firms are lower, have better quality, and will have more confidence in collecting claims. Therefore, the risk of granting credit to them will also be lower.

References

Abbott, L. J., Parker, S., & Peters, G. F. (2004). Audit committee characteristics and restatements. *Auditing: A journal of practice & theory*, 23(1), 69-87.

Abbott, L., Parker, S., & Peters, G. F. (2002). Audit committee characteristics and financial misstatement: A study of the efficacy of certain blue ribbon committee recommendations. *Available at SSRN* 319125.

Abdulwahid A. Hasheda, B., and Faozi A. Almaqtari (2021). The impact of corporate governance mechanisms and IFRS on earning management in Saudi Arabia. Content lists are available at Growing Science. *Accounting homepage*: www.GrowingScience.com/ac/ac.html. Accounting 7 (2021) 207–224.

Aghaie, M. A., & Chalaki, P. (2009). Investigating the Relationship between Corporate Governance and Profit Management Characteristics in Firms Listed in Tehran Stock Exchange. *Accounting and Auditing Research*, 1(4), 54-75. DOI: 10.22034/iaar.2009.105176. (in Persian)

Baghbani S. M., Pourghaffar Dastjerdi J. (2014). The Effect of the Board of Directors Structure on Earnings Management in Firms Accepted in Tehran Stock Exchange. *Qjfep*, 2 (5), 105-120. (in Persian)

Bannister, J.W. & Wiest, D.N. (2001), "Earnings management and auditor conservatism: effects of SEC enforcement actions," *Managerial Finance*, Vol. 27, No. 12, pp. 57-71.

Bashir, B., Rashid, M., & Bashir, Z. (2024). Impact of Ownership Structure and Corporate Governance on Earning Management: Empirical Findings from Listed Firms on the Pakistan Stock Exchange. *SEISENSE Journal of Management*, 7(1), 1-20.

Brookman, J., & Thistle, P. D. (2009). CEO tenure, the risk of termination, and firm value. *Journal of Corporate Finance*, 15(3), 331-344.

Bronson, S. N., Carcello, J. V., Hollingsworth, C. W., & Neal, T. L. (2009). Are Fully Independent Audit Committees Really Necessary? *Public Policy*, 28, 265–280.

Chatterjee, R., & Rakshit, D. (2023). Association between earnings management and corporate governance mechanisms: A study based on select firms in India. *Global Business Review*, 24(1), 152-170.

Choy, H.L. (2012), "Assessing earnings management flexibility." *Review of Accounting and Finance*, 11(4), 340-376.

Davidson, R., Goodwin-Stewart, J., & Kent, P. (2005). Internal governance structures and earnings management. *Accounting & Finance*, 45(2), 241-267.

Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review*, 70, 193–225.

Dennis, D., McConnell, J. (2003). International corporate governance. *Journal of Financial and Quantitative Analysis*, 38, 1–36.

Didar, H., Mansourfar, G., & Kafami, M. (2014). The impact of corporate governance mechanisms on the tax gap of listed firms in the Tehran Stock Exchange. *Accounting and Auditing Review*, 21(4), 409-430. DOI: 10.22059/acctgrev.2014.52901. (in Persian)

Ebaid, I.S. (2012), "Earnings management to meet or beat earnings thresholds: Evidence from the emerging capital market of Egypt," *African Journal of Economic and Management Studies*, 3(2), 240-27.

Ebrahim, A. M. (2004). The effectiveness of corporate governance, institutional ownership, and audit quality as monitoring devices of earnings management. *Rutgers, The State University of New Jersey*, Graduate School-Newark.

El Diri, M., Lambrinoudakis, C., & Alhadab, M. (2020). Corporate governance and earnings management in concentrated markets. *Journal of Business Research*, 108, 291-306.

Feng, Z. Y., & Huang, H. W. (2021). Corporate

governance and earnings management: A quantile regression approach. *International Journal of Finance & Economics*, 26(4), 5056-5072.

Fraud, K., Ane Tolnes Haugdal, Anna Søndergaard and Anne Vågslid (2020). Corporate Governance and Earnings Management in a Nordic Perspective: Evidence from the Oslo Stock Exchange. Received: 11 September 2020; Accepted: 26 October 2020; Published: 29 October 2020.

Ghaemi, F., Moradi, Z., & Alavi, Gh. (2019). The effect of audit committee characteristics on internal controls and profit management. *Financial Accounting and Audit Research (Financial Accounting and Audit Research Journal)*, 12(46), 259-280. (in Persian)

Ghodrati, H., Faizi, S. (2014). The effect of corporate governance on the amount of profit management in the Tehran Stock Exchange market. *Journal of Audit Science*, 15(1), 205-232. (in Persian)

Gillan, S. (2006). Recent developments in corporate governance: an overview. *Journal of Corporate Finance*, 12, 381–402.

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365-383.

Hu, N.; Hao, Q.; Liu, L.; Yao, L.J. (2015), "Managerial tenure and earnings management." *International Journal of Accounting and Information Management*, 23(1). 42-59.

Iqbal, A.; Strong, N. (2010), "The effect of corporate governance on earnings management around UK rights issues." *International Journal of Managerial Finance*, 6 (3), 168–189.

Jamei, R., & Rostamian, A. (2015). The effect of the financial expertise of audit committee members on the characteristics of expected profits. *Financial Accounting and Audit Research Journal*, (8), (29), 1-17. (in Persian)

Jeiran Asia, M., & Ghayour, A. (2023). The Effect of Ownership Structure on Earning Management in Firms Listed on the Tehran Stock Exchange. *Journal of Accounting and Management Vision*, 6(80), 1-13. (in Persian)

Jensen, M. C., & Meckling, W. H. (1976). "Theory of the Firm: Managerial behavior, agency costs, and ownership structure," *Journal of Financial Economics*, 3(4), 305–360.

Jiraporn, P.; Miller, G.; Yoon, S.S.; Kim. Y.S. (2008), "Is earnings management opportunistic or beneficial? An agency theory perspective". *International Review of Financial Analysis*, 17 (3), 622-634.

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193–228.

Kanagaretnam, K.; Lobo, G.J.; Mathieu, R. (2004), "Earnings Management to Reduce Earnings Variability: Evidence from Bank Loan Loss Provisions." *Review of Accounting and Finance*, Vol. 3, No. 1, pp. 128–148.

Kirana, D. J., Wibawaningsih, E. J., & Wijayanti, A. (2020). The Role of Corporate Governance in Constraining Earning Management. *Journal of Accounting and Finance Management*, 1(3), 138-149.

Lari Dasht Bayaz, M. (2017). Audit Committee Characteristics and Audit Fee: Evidence from Tehran Stock Exchange. *Empirical Research in Accounting*, 6(4), 69-94. DOI: 10.22051/jera.2016.9939.1283. (in Persian)

Lin, Z. J., Xiao, J. Z., & Tang, Q. (2008). The roles, responsibilities, and characteristics of audit committees in China. Accounting. *Auditing & Accountability Journal*, 21(5), 721-751.

Lobo, G. J., & Zhou, J. (2001). Disclosure quality and earnings management. *Asia-Pacific Journal of Accounting & Economics*, 8(1), 1-20.

Mahdavi Parsa, A., & Nourahmadi, M. (2018). Ranking Iranian banks according to corporate governance based on bank documents. *Journal of Investment Knowledge*, 7(26), 199-220. (in

Persian)

Mohaghegh. A., & Farahini Farahani, H. (2023). Investigating the impact of the potential and dynamics of the board of directors on the management of actual and accrual profit. *The 8th international conference on industry-oriented management, economics, and accounting studies*, Tehran. (in Persian)

Nakhai, K., & Ahmadnejad, A. (2020). Investigating the relationship between ownership structure and profit management in the Tehran Stock Exchange. *Research in Accounting and Economic Sciences*, 4 (4 (14)), 33-41. (in Persian)

Namazi, M., & Kermani, E. (2009). Investigating the Effects of Ownership Structure on The Performance of the Firms Accepted in the Tehran Stock Exchange. *Accounting and Auditing Review*, 15(4), 83-100. (in Persian)

Nguyen, Q., Kim, M. H., & Ali, S. (2024). Corporate governance and earnings management: Evidence from Vietnamese listed firms. *International Review of Economics & Finance*, 89, 775-801.

Prawitt, D. F., Smith, J. L., & Wood, D. A. (2009). Internal audit quality and earnings management. *The Accounting Review*, 84(4), 1255-1280.

Salehi, M., Oradi, J., & Salari Forg, Z. (2015). The effect of the existence of the audit committee and its characteristics on the delay of the audit report. *Journal of Accounting Knowledge*, 7(26), 59-83. (in Persian)

Salehi Kordabadi, S., & Yousefi, S. (2015). The effect of corporate governance on profit management (case study: insurance industry of Gilan province). *International conference on change and transformation management*, Isfahan University. (in Persian)

Shams, M., Fooladi, M., & Farhadi, M. (2016). The Effect of Board Independency and Audit Quality on Earnings Management in Listed Firms in Tehran Stock Exchange. *Journal of Iranian Accounting Review*, 3(10), 61-80. DOI: 10.22055/jiar.2016.12734. (in Persian)

Shleifer, A., Vishny, R. (1997). A survey of corporate governance. *Journal of Finance*, 52, 737–783.

Sirait, Y. H., Bukit, R. B., & Kesuma, S. A. (2022). The Influence of Good Corporate Governance on Earning Management on Manufacturing Firm Listed In Indonesia Stock Exchange. *Jurnal Mantik*, 6(3), 2882-2891.

Soltana, N., Harjinder, S., Vander, Z. (2014). Audit committee characteristics and audit report lag. *International Journal of Auditing*, 19, 57–130.

Surjandari, D. A., Minanari, M., & Nurlaelawati, L. (2021). Good Corporate Governance, Leverage, Firm Size, And Earning Management Evidence from Indonesia. *International Journal of Commerce and Finance*, 7(2), 165-183.

Tajvidi, E., & Ghaempanah, M. (2021). Audit Committee Characteristics and Earnings Management. *Accounting and Auditing Research*, 13(49), 155-174. DOI: 10.22034/iaar.2021.131576. (in Persian)

Teoh, S., Welch, I., & Wong, T. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics*, 50, 63–99.

Vaez S. A. (2013). Impact of institutional ownership on accounting earnings management and how to limit its impact on the level of managerial ownership. *Quarterly journal of modern accounting theories*, *3*(3), 77-96. (in Persian)

Vakilifard, H. R. (2015). The effect of corporate governance level on earnings transparency and cost of capital in Tehran stock exchange. *Accounting and Auditing Research*, 7(26), 46-57. DOI: 10.22034/iaar.2015.103905. (in Persian)

Varnamkhasti, J. H. (2022). Studying the impact of corporate governance on earning management with the mediating role of financial leverage: Case study firms listed on the Tehran stock exchange. *International Journal of Health*

Sciences, (III), 4094-4111.

Xie, B., Davidson III, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: the role of the board and the audit committee. *Journal of corporate finance*, 9(3), 295-316.

Zalaghi, H., & Ghadami Mashhour, A. (2018). Relationship between Real Earnings Management and Accruals Earnings Management with the Transparency of Accounting Information in Listed Firms in Tehran Stock Exchange. *Empirical Studies in Financial Accounting*, 15(58), 161-179. DOI: 10.22054/qjma.2018.9430. (in Persian)