

The effect of corporate strategic change on auditors' predictions of going-concern opinions: the influence of crisis caused by the pandemic

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Abstract

Purpose – The purpose of this study is to investigate the impact of corporate strategic change (CSC) on the probability of an auditor's going-concern opinion (GCOP) and the moderating role of COVID-19 on companies listed on the Tehran Stock Exchange.

Design/methodology/approach – Information about 193 companies from 2014 to 2023 is examined. Considering that the dependent variable was binary, binary logistic regression analysis was used.

Findings – The results of this study showed that CSC decreased the probability of a GCOP. Moreover, COVID-19 strengthened the adverse effects of CSC on the probability of an auditor's opinion of going concern. The results also confirmed that CSC is exogenous in econometric models, indicating no omitted-variable bias or reverse causality.

Originality/value – Audit failures in the past few years have highlighted a severe lack of early warning mechanisms and GCOPs. Although the existing models offer no recourse, the International Auditing and Assurance Standards Board's (IAASB) direction in revising the International Standard on Auditing 570 shows that strategic cues can be powerful managerial signals, moving audit frameworks into managerial behavior. Moreover, signals under crisis and external shocks (e.g. COVID-19) can amplify the interpretive power of strategic behavior. This study empirically validates IAASB's direction of IAASB. Through incorporating CSC and COVID-19, audit models can become more sensitive to proactive turnaround behaviors, thereby reducing systemic audit blind spots.

Keywords COVID-19, Going-concern opinion, Going-concern opinion prediction, Probability of going-concern opinion, Strategic change, Auditor's going-concern opinion

Paper type Research paper



1. Introduction

Auditors' opinions about going concern have long been debated. The primary cause is the business failure of companies that have recently undergone audits (Zdolšek *et al.*, 2022; Zeng and Ma, 2024). Although the employee outlook provides explanatory power in predicting firm bankruptcy (Cheng and Yuan, 2025), auditors frequently encounter uncooperative clients that make evidence collection more difficult. Auditors not only increase their skeptical judgments in response to uncooperative clients but also decrease their skeptical actions, creating an inconsistency that contradicts the audit risk model (Ricci and Rimkus, 2025). Hence, there are many controversial reactions among investors and scholars to the release of going-concern audit reports (Brunelli *et al.*, 2024).

Businesses implement strategic adjustments to guarantee their existence, especially during fierce rivals. These adjustments are made in response to the changing internal and external environments (Liu *et al.*, 2023; Pettit *et al.*, 2023). Hence, corporate strategic change (CSC) can establish new dynamics that affect auditors' evaluations of financial stability and concern (Wu *et al.*, 2024). While extant studies heavily lean on traditional financial indicators to predict auditors' going-concern opinions (GCOPs) (Carson *et al.*, 2013; Geiger and Rama, 2006), they treat firms as passive entities and neglect managerial active role in shaping the firm's outcomes through strategic decision-making. In this regard, high-profile audit failures, such as the collapse of 75% of UK companies without a prior going-concern alarm (Financial Times, 2024), could evidence this claim and highlight the severe lack of early warning mechanisms. Although the existing models offer no recourse, strategic shifts are powerful managerial signals that show adaptive capacity (Wenzel *et al.*, 2020); they remain largely unexamined in audit judgment literature. This overlooks the application of interactive intelligent auditors when evaluating real-time management responses to adversity. Considering the importance of CSC in assessing the probability of a GCOP, it is crucial to further investigate this impact. At present, there is a lack of solid understanding of the link between CSC and the prediction of an auditor's GCOP, and past research has not explored how CSC influences the likelihood of an auditor's GCOP. This study bridges the gap in the literature.

Over the years, businesses have encountered numerous crises, such as the COVID-19 outbreak, leading them to reform their organizational structures and make necessary changes based on the impact of crisis (Blaique *et al.*, 2024; Verbeke and Yuan, 2025). Under these circumstances, businesses needed to find ways to address risks and satisfy the assumption of going concern (Chiose and Hategan, 2024). COVID-19 posed tangible difficulties for auditors (e.g. limitations on travel and remote work) in obtaining sufficient audit evidence. Consequently, auditors' ability to apply traditional audit procedures is limited, which could have led to changes in their decisions (Wang *et al.*, 2025). While companies changed their plans to deal with the pandemic, the methods used by auditors represented an essential response to uncertainty and crises in the businesses they audit. Evidence shows that auditors were reluctant to issue GCOPs because of the COVID-19 pandemic in 2020 (Zeng and Ma, 2024), which can show sufficient (or insufficient) consideration of crisis-linked strategic signaling for auditors and consider auditor interpretation as complex contextual decoding rather than simple signal reception. Hence, empirical studies are needed to unpack signal (i.e. COVID-19)–response (i.e. GCOP) dynamics, along with treating strategic behavior (i.e. CSC). Second, previous studies did not address how COVID-19 influences the relationship between CSC and the probability of an auditor's GCOP. This study intends to fill this gap in the literature through further research.

This study contributes to literature in several ways. First, prior research has predominantly concentrated on constructing a going-concern prediction model for companies (Abbaskhani *et al.*, 2024; Martens *et al.*, 2008; Zdošek *et al.*, 2022). However, a firm's strategic agency has been neglected in shaping its survival prospects. Hence, it is necessary to enhance the comprehension of processual dynamics of strategic change (Kunisch *et al.*, 2017; Wu *et al.*, 2024). This study uniquely associates CSC with the GCOP, moving the audit framework into managerial behavior, which is consistent with the signaling theory (Spence, 1973), upper echelons theory (Hambrick and Mason, 1984) and dynamic managerial capability theory (Adner and Helfat, 2003). Moreover, this study empirically validates the International Auditing and Assurance Standards Board's (IAASB) direction in revising the International Standard on Auditing (ISA) 570 by showing that strategic cues are meaningful in GCOP decision-making,

which can provide regulators and standard setters with evidence-based justification to integrate qualitative variables in risk-based audit planning.

Second, the accounting sector has undergone considerable intellectual and professional transformations concerning financial crises in various nations. The pace of change went into hyperdrive during the COVID-19 pandemic; since then, additional challenges that require change have emerged. By analyzing the interaction between CSC and the COVID-19 crisis, this study shows that external shocks (e.g. COVID-19) amplify the interpretive power of strategic behavior, and the signals are significant in strength during a crisis. This interaction can be interpreted through the lens of Institutional Theory, crisis management literature and economic and psychological perspectives. Therefore, this study recognizes the importance of investigating new research paths that focus on the effect of CSC on auditors' assessments of GCOPs, especially during the COVID-19 pandemic as a significant crisis. Nonetheless, this topic has not been adequately explored in existing literature.

Third, the IAASB presented a summary of specific matters for consideration arising from the COVID-19 situation for several ISAs, which set out changes to the planned audit approach, areas where significant focus might be required, specific considerations for subsequent events, going concern and group audits and the consequences for reporting. However, many companies have not completely adhered to these standards, particularly with regard to subsequent events, concerns, fair value and financial instruments. Rather than accurately evaluating the effects of COVID-19 and providing suitable disclosures, companies have used optimistic, ambiguous and subjective languages to defend their lack of transparency (Karim *et al.*, 2024). This study creates incentives for management to proactively engage with auditors regarding turnaround strategies, strategic investments and risk mitigation plans. Moreover, this study offers a partial remedy to problems such as 75% of failing UK firms receiving no prior GCOPs (Financial Times, 2024). Through incorporating CSC and COVID-19, audit models can become more sensitive to proactive turnaround behaviors, thereby reducing systemic audit blind spots.

Fourth, global stock markets are adversely affected by the Israel–Iran conflict, particularly developing and emerging markets, along with stock exchanges in the Middle East and Asia (Arianpoor, 2025; Pandey, 2025). Auditors in developing markets may encounter difficulties in recognizing and revealing significant audit issues, potentially influencing their predictions of GCOPs. Hence, the relationship between CSC, GCOP and the COVID-19 pandemic amid Iran's economic sanctions is complex and multilayered. The effects of these factors can be examined continually, particularly in developing and emerging economies. Therefore, Iran offers an appropriate context for this study and the challenges facing Iran offer important insights about other countries. Furthermore, studying this research in Iran can promote better alignment between auditing practices and auditors' predictions of GCOPs amid the extraordinary challenges facing this country.

This study gathered data on 193 firms listed on the Tehran Stock Exchange (TSE) between 2014 and 2023 to fill this gap. This finding revealed that CSC is negatively associated with GCOP. The inclusion of $CSC \times COVID$ as a moderator in a logistic framework allows the quantification of how environmental turbulence reshapes the interpretation of managerial behavior, which few audit studies have addressed. The results also showed that CSC had a stronger mitigating effect on GCOP during the COVID-19 crisis. Additionally, through applying the control function method (Wooldridge, 2015), this study verifies that CSC is not influenced by prior GCOP issuances, thereby ensuring causal integrity. This leads to substantial methodological advancements in the causal inference within audit research, in which such techniques are still rare.

The literature review and hypothesis formulation are explained in the following sections. Section 3 outlines the research methodology. The results of this study are summarized in Section 4. Finally, the discussion and conclusions are presented in the fifth and sixth sections, respectively.

2. Literature review and hypothesis formulation

2.1 *Going-concern opinions*

In recent years, standard-setting bodies in the USA and globally, including the Financial Accounting Standards Board and IAASB, have discussed, suggested and put into practice regulations related to the assessment of a company's capacity to persist as a concern from the viewpoints of both management and auditors (Desai *et al.*, 2025). However, real-world data highlight past auditor shortcomings. For instance, auditors did not sound a warning before 75% of the UK's largest publicly listed firms that failed between 2010 and 2022 (Financial Times, 2024), indicating a lack of skepticism. The IAASB has recently made significant changes to its standard on Going Concern, as seen in the release of ISA 570 (Revised 2024), Going Concern, which tackles the key public interest issues and promotes enhanced audit quality. These alterations are a direct reaction to significant corporate collapses, and increasing stakeholder calls for stronger and clearer audit practices concerning the evaluation of an entity's capacity to persist as a going concern (IAASB, 2025). The IAASB's approach to revising ISA 570 demonstrates a strategic focus on cues that are critical for effective GCOP decision-making.

Several studies (Abbaskhani *et al.*, 2024; Hardies *et al.*, 2018) introduced going-concern models that incorporate variables that are typically not accessible to most auditors. Numerous studies also use information that does not pertain directly to the auditee but instead to the auditor (audit firm and lead auditor) (Hardies *et al.*, 2016; Lennox and Wu, 2018). As strategic behavior based on informed beliefs is related to the auditor's actions (Ricci and Rimkus, 2025) and the IAASB's revision of ISA 570 is also marked by a clear strategic direction and meaningful cues into the audit process (IAASB, 2025), this study examines the effect of CSC on the GCOP.

2.2 *Strategic change and auditor's going-concern opinion prediction*

Companies make effective strategic adjustments to proactively respond to shifts in their internal and external environments (Liu *et al.*, 2023), and this strategic change impacts the entire operating environment of a firm (Wu *et al.*, 2024). In line with the signaling theory (Spence, 1973), CSC can serve as credible signals of managerial intent, adaptability and long-term viability. These strategic actions taken by the management may reduce doubts about firm continuity and viability. Therefore, CSC can act as a forward-looking signal that can reduce the perceived audit risk, thereby decreasing the GCOP. In line with recent revisions to auditing standards, including ISA 570 (Revised 2024), with an emphasis on the importance of evaluating management mitigation plans and future-oriented actions (IAASB, 2025), strategic change can fit directly within this framework, reinforcing its theoretical relevance.

Moreover, according to the upper echelons theory (Hambrick and Mason, 1984), organizational outcomes, such as strategic choices and performance, are significantly shaped by the characteristics of top-level managers. They can reflect the values, cognition and strategic choices of top executives. Hence, with regard to the dynamic managerial capability theory, which emphasizes the role of managerial skills, perception and motivation in sensing opportunities, seizing them and transforming the organization (Adner and Helfat, 2003; Baishya *et al.*, 2025), these actions can be a sign of innovation and an effort to improve the company's performance (Bruynseels and Willekens, 2012; Guo *et al.*, 2022), indicating a

management team's proactive stance in adapting to environmental conditions and managing risks (Chenhall and Moers, 2015). As auditors form professional judgments based on both quantitative indicators and qualitative signals (Nelson, 2009; Bauer, 2015), they may interpret such visible executive decisions as a form of managerial competence and planning. As these strategic and operating turnaround initiatives can indicate a favorable outlook on a firm's going-concern status (Bruynseels and Willekens, 2012), it is expected that the probability of an auditor issuing a GCOP is expected to decrease. The first hypothesis was formulated as follows:

- H1. Strategic change negatively affects the probability of an auditor's going-concern opinions.*

2.3 COVID-19, strategic change and auditor's going-concern opinion prediction

Auditors intensified their risk evaluation processes because of the uncertainties caused by COVID-19. This encompasses a more comprehensive assessment of companies' financial stability and liquidity, which is essential for the assessment of their capacity to maintain operations (Feghali *et al.*, 2022). Several studies, such as Oswald (2021), have shown an increase in the likelihood of commenting on the persistence of activity during COVID-19. However, conflicting results have been reported. According to the contingency theory (Donaldson, 2001), effectiveness depends on the correspondence between structure and context; thus, the effectiveness of managerial actions and organizational strategies is context-dependent. Thus, the impact of CSC on auditor judgment must be evaluated in light of environmental uncertainty. Numerous opportunities for significant progress exist if institutional and corporate leaders opt to draw lessons from the experiences of COVID-19 and past initiatives (Grant and Wunder, 2021). In this regard, Akpan *et al.* (2024) showed that entrepreneurship thrived during COVID-19, with small and medium-scale enterprises transforming challenges into opportunities via product innovation, resulting in enhanced competitiveness and performance. It suggests that proper preparation and comprehension of effective strategic responses can mitigate the adverse effects.

The interaction between CSC and COVID-19 can be interpreted through the lenses of institutional theory, crisis management literature and adaptation theory. In institutionalized environments, such as audits, decision-makers often rely on symbolic cues to assess organizational legitimacy (Milne and Patten, 2002; Stology *et al.*, 2019; Suchman, 1995). During crises, firms that show strategic proactiveness signal resilience and adaptability and are more likely to survive and recover (Bundy *et al.*, 2016). According to the adaptation theory of the mechanisms of adaptive behavior, this adaptation is not merely an independent action. However, it is also influenced by the collective behavior of organizations (Feng and Liu, 2024), thereby gaining institutional approval. This finding supports the argument of Wenzel *et al.* (2020), who suggest that strategic responsiveness during crises enhances perceived organizational credibility, thereby amplifying its positive signaling effect. Thus, COVID-19 has not only challenged the existing business strategies but also offered an opportunity for organizations to reassess their methods, highlighting the importance of flexibility, resilience and a greater emphasis on short-term adaptability while maintaining attention to long-term objectives. Therefore, according to the signaling theory, management implements visible and often costly changes to show commitment to resolution of financial distress and improvement of prospects and can adopt new strategies to manage a crisis, such as strategic change and business continuity plans. Auditors might also regard these changes as favorable and interpret them as evidence for the company being proactively addressing its

challenges, which reduces the perceived risk of business failure and, consequently, the probability of providing a GCOP. As previously discussed, *H2* can be formulated as:

- H2.* COVID-19 strengthens the negative effect of strategic change on the probability of an auditor's going-concern opinions.

Figure 1 presents the conceptual framework of study.

3. Research methodology

Because of the accessibility and dependability of data from the TSE, a study was conducted on every listed company. Information gathered over 10 years, from 2014 to 2023, was obtained for examination. Nearly in 2014, audit guidelines and internal controls, such as audit committees, internal audit functions and internal controls, were mandated for publicly traded companies. Hence, 2014 is the baseline for obtaining more pertinent information in this study. In addition, accessible data will be available until 2023. Nevertheless, because of the various characteristics of investment firms, financial intermediaries, holdings, banks and leasing companies, these organizations were excluded from the analysis. Moreover, it is important to highlight that the financial year for the majority of TSE-listed firms aligns with the Iranian calendar, which ends on March 20. Consequently, firms that have experienced modifications in their fiscal years or operations are omitted from the analysis. A total number of 193 companies were selected for analysis following these criteria and guaranteeing access to the required data.

3.1 Model and variables under study for testing

Equation (1) is used to test *H1*, and equation (2) tests *H2*. Equation (1) examines the direct effect of CSC on GCOP, while equation (2) explores the moderating effect of COVID-19 on the relationship between CSC and GCOP:

$$\begin{aligned} \text{GCOP}_{i,t} = & \alpha_0 + \alpha_1 \text{CSC}_{i,t} + \alpha_2 \text{SIZE}_{i,t} + \alpha_3 \text{LOSS}_{i,t} + \alpha_4 \text{TENURE}_{i,t} + \alpha_5 \text{ROA}_{i,t} \\ & + \alpha_6 \text{AUDIT SIZE}_{i,t} + \alpha_7 \text{AUDIT LAG}_{i,t} + \alpha_8 \text{P/E}_{i,t} + \alpha_9 \text{ROS}_{i,t} + \text{ENDYEAR} \\ & + \text{YEAR} + \text{INDUSTRY} + \varepsilon_{it} \end{aligned} \quad (1)$$

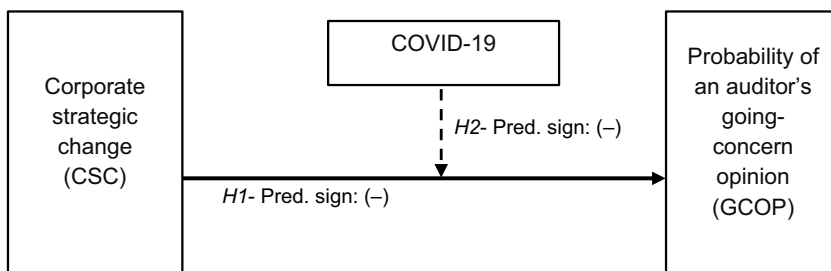


Figure 1. The conceptual framework for the tests

Source: Figure by authors

$$\begin{aligned} \text{GCOP}_{i,t} = & \alpha_0 + \alpha_1 \text{CSC}_{i,t} + \alpha_2 \text{COVID}_{i,t} + \alpha_3 \text{CSC}_{i,t} \times \text{COVID}_{i,t} + \alpha_4 \text{SIZE}_{i,t} + \alpha_5 \text{LOSS}_{i,t} \\ & + \alpha_6 \text{TENURE}_{i,t} + \alpha_7 \text{ROA}_{i,t} + \alpha_8 \text{AUDIT SIZE}_{i,t} + \alpha_9 \text{AUDIT LAG}_{i,t} \\ & + \alpha_{10} \text{P/E}_{i,t} + \alpha_{11} \text{ROS}_{i,t} + \text{ENDYEAR} + \text{YEAR} + \text{INDUSTRY} + \varepsilon_{it} \end{aligned} \tag{2}$$

GCOP represents the probability of an auditor’s GCOPs. According to [Martens et al. \(2008\)](#), the decision table predicting GCOP is presented in [Table 1](#), where RE/TA is the retained earnings divided by total assets, NI is 1 if the net income is negative and 0 otherwise. LNTA is the natural log of total assets, CR is the current ratio, TL/TA is total liabilities divided by total assets and ΔWC/TA is the one-year change in working capital divided by the total assets. ΔTL/TA is the one-year change in total liabilities divided by the total assets. Moreover, REPORT is 1 if the going-concern report is issued and 0 otherwise. In this study, the same procedure as that of [Martens et al. \(2008\)](#) was used to calculate the GCOP, as explained in [Table 1](#).

As the dependent variable in this study, the GCOP, is a binary outcome, a binary logistic regression model was used for hypothesis testing. This modeling approach is appropriate for dichotomous dependent variables and allows the estimation of a firm’s probability of receiving a GCOP based on the predictor variables. The model used for testing is presented here. [Equation \(3\)](#) shows that the probability of a GCOP is equal to 1:

$$\Pr(\text{GCOP} = 1) = \frac{e^{\sum \hat{\alpha}_i x_i}}{1 + e^{\sum \hat{\alpha}_i x_i}} \tag{3}$$

CSC refers to the strategic corporate change. Following [Finkelstein and Hambrick \(1990\)](#), this study calculates strategic variation and deviation for the following dimensions:

- advertising intensity (advertising/sales);
- research and development intensity (Research and Development/sales);

Table 1. Decision table predicting going-concern opinion

RE/TA	NI	LNTA	CR	TL/TA	ΔWC/TA	ΔTL/TA	Report = 1	Report = 0
<0.05	= 0	<10.813	<1 ≥1	– <1	– <–0.241 ≥–0.241	– <0.094 ≥0.094	√	–
							–	√
							√	–
							–	√
							√	–
	= 1	–	–	–	–	–	√	–
							–	√
							√	–
							–	√
							√	–
≥0.05	–	<10.813	–	<1	<–0.241 ≥–0.241	<0.094 ≥0.094	–	√
							√	–
							–	√
							√	–
							–	√
	10.813	–	–	–	<–0.241 ≥–0.241	<0.094 ≥0.094	–	√
							√	–
							–	√
							√	–
							–	√

Source(s): [Martens et al. \(2008\)](#)

- upgrades of plant and equipment (net property, plant and equipment/gross property, plant and equipment);
- nonproduction overhead (Selling, General and Administrative expenses/sales);
- levels of inventory (inventory/sales);
- financial leverage (debt/equity); as global issues are now more widely acknowledged as a key part of strategy ([Sanders and Carpenter, 1998](#)), this research incorporated a seventh metric; and
- international commitment (foreign sales/total sales).

Initially, the three-year standard deviation for every strategy index was computed for each company to capture strategic volatility. Subsequently, these seven components were normalized to account for scale differences and combined using an equal-weighted approach to form a composite CSC index. This method captures both the magnitude and breadth of strategic changes over time. A higher CSC index indicates greater strategic variability, reflecting more substantial strategic shifts undertaken by the management. COVID denotes the COVID-19 variable assigned a value of 1 starting in January 2020 and 0 before that month.

This study incorporates a series of control variables known to systematically influence GCOPs. SIZE is the firm size and is equal to the natural logarithm of total assets at the end of financial year. Larger companies in financial crisis conditions have a lower risk of receiving a report with an ambiguity clause in the continuity of activity, because they have more power to negotiate with creditors and more resources to prevent bankruptcy ([DeFond et al., 2016](#)). TENURE denotes the auditor tenure. If the auditor's tenure is three or more years, then it is assigned a value of 1; otherwise, it is 0. Longer tenure enables an auditor to collect more evidence. This allows the auditor to provide a better report on uncertainty about an entity's concerns ([Xu et al., 2018](#)). LOSS is the firm's loss during the current period. If there was a loss, then it got the value 1; otherwise, 0. The greater the loss in the current period and the financial helplessness of the company, the higher the probability of issuing an audit report with an ambiguity clause in the continuity of activity ([Xu et al., 2018](#)). ROA is the return on assets and is equal to dividing the net profit before unexpected items by total assets at the end of financial year ([Hossain et al., 2020](#)). ROA shows the effectiveness of management in benefiting from the total investment in assets. Companies with lower profitability have a higher bankruptcy risk. Therefore, with a decrease in profitability, the possibility of adjusting audit reports increases because of the ambiguity in continuity of activity ([Hossain et al., 2020](#)). AUDIT SIZE refers to the size of the firm auditor i in year t . If the Audit Organization of Iran is a firm auditor, then it receives a value of 1, and otherwise, it is 0.

The AUDIT LAG is a delay in audit reports. Auditors delay their reports if they discover things that raise doubts about the company's continued activities, hoping that the manager can solve the problem. This variable is measured as the logarithm of the number of days between the end of financial year and publication of auditor's report. P/E is price-to-earnings ratio. According to [Hapsoro and Santoso \(2018\)](#), the price-to-earnings ratio positively affects the probability of an auditor commenting on continuity of activity. This variable is measured by dividing the price of each share by profit. ROS is the return on sales. According to [Hapsoro and Santoso \(2018\)](#), return on sales has a positive effect on the probability of an auditor commenting on the continuity of activity. This variable is calculated by dividing net profit by sales. EndYear serves as the control variable for fiscal year end. The financial year for the majority of TSE-listed firms is approximately March 20. Thus, a firm's fiscal year-end is controlled and is 1 if it is March 20; otherwise, it is 0.

4. Empirical results

4.1 Data descriptive statistics and correlation analyses

Descriptive statistics for the main research variables are presented in Table 2. The results show that the maximum CSC value is 79.560, the minimum value is 0.000 and the mean value is 1.957, which indicates stark differences in the CSC range initiated by CEOs. The results show that CSC is highly skewed, indicating that most firms engage in low-to-moderate levels of strategic change, but a few firms have extreme values. The P/E is also highly non-normal, with extreme outliers in both directions. These two variables can be outliers, which can bias the model coefficients and reduce the statistical efficiency. To address this, this study applies a natural log transformation with a smoothing constant to compress the distribution and reduce the influence of CSC outliers. This approach retains all observations, including zero values, and significantly reduces the skewness and variance. To enhance comparability with other predictors and maintain scale consistency, minimum–maximum normalization was performed. Consequently, the CSC values were transformed into the [0, 1] interval while preserving their relative order. Because the standard log transformation cannot handle negative values for the P/E variable, a signed log transformation was applied. This transformation handles both negative and positive values symmetrically, without omitting any data. This reduces the effect of extreme values, while preserving the sign and interpretability of the original data. To facilitate interpretability and ensure a unit-free scale, the transformed P/E variable was standardized. These transformation procedures offer several benefits: all observations are retained, skewness and kurtosis for both variables are reduced; numerical stability in the regression estimation is enhanced; and comparability and scale alignment with other variables are improved. This transformation has been used in econometric studies.

Table 3 presents the results of the correlation analysis of research variables. The results show that the correlation between CSC and the probability of a GCOP (GCOP) is negative

Table 2. Descriptive statistics of main variables

Variable	Mean	Median	SD	Min.	Max.	Skewness	Kurtosis
CSC	1.957	0.512	7.800	0.000	79.560	2.056	1.714
SIZE	6.493	6.385	0.759	4.574	9.368	0.661	0.540
ROA	0.154	0.129	0.163	−0.563	0.765	0.449	0.658
AUDIT LAG	4.334	4.419	0.375	2.773	5.236	−0.844	0.160
P/E	42.170	9.215	155.553	−819.640	1,027.435	1.994	1.469
ROS	0.180	0.144	0.238	−0.962	1.817	0.856	0.915
		Score	Frequency		%		
GCOP		0	784		40.62		
		1	1146		59.40		
LOSS		0	1751		90.73		
		1	179		9.27		
TENURE		0	1004		52.02		
		1	926		47.98		
AUDIT SIZE		0	1662		86.11		
		1	268		13.89		
COVID		0	1158		60		
		1	772		40		
ENDYEAR		0	320		16.58		
		1	1610		83.42		

Source(s): Authors' own work

Table 3. Correlation analysis of research variables

Variable	GCOP	CSC	SIZE	LOSS	TENURE	ROA	AUDIT SIZE	AUDIT LAG	P/E	ROS	COVID
GCOP	1										
CSC	-0.056**	1									
SIZE	-0.023	-0.009	1								
LOSS	0.126***	0.257***	-0.062***	1							
TENURE	-0.034	-0.004	0.095***	0.027	1						
ROA	-0.231***	-0.223***	0.210***	-0.493***	-0.028	1					
AUDIT SIZE	0.075***	0.039*	0.203***	0.083***	0.260***	-0.062***	1				
AUDIT LAG	-0.058**	0.068***	0.174***	0.093***	-0.011	-0.079***	0.042*	1			
P/E	0.076***	0.061***	-0.060	-0.203***	0.013	-0.160***	-0.017	0.036	1		
ROS	-0.213	-0.198	0.177	-0.496	-0.024	0.497	-0.016	-0.067	-0.108	1	
COVID	-0.030**	0.042*	0.423***	-0.103***	0.040	0.281***	-0.060***	0.110***	0.057***	0.221***	1

Note(s): This table presents the correlations for the regression variables. Variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10, 5 and 1% levels, respectively

Source(s): Authors' own work

(coefficient: -0.056). This result provides initial support for *H1*. Additionally, COVID-19 (COVID) was positively correlated with CSC (coefficient = 0.042). Moreover, COVID-19 was negatively correlated with GCOP (coefficient: -0.030). These results offer initial support for *H2*.

4.2 Data analysis and primary findings

As the data were collected from Rahavard Novin and the Securities Exchange Organization and Codal (Comprehensive Database of All Listed Companies) Network, which are reliable sources, no data were missing. The F-timer test results showed in Models 1 and 2, the assumption of the panel data method was not met. Therefore, ordinary binary logistic regression was used. The normality of variables or residuals was not among the assumptions required for binary logistic regression. Instead, key assumptions for the binary logistic regression were performed. For both models, all variance inflation factor values were well below five, indicating no serious multicollinearity. In this research, equations (1) and (2) were estimated using two dependent variables and binary logistic regression. It is noteworthy that the coefficient estimates were not supplied for either level of the dependent variable.

Table 4 presents the results of binary logistic regression analysis. As shown in Table 4, the coefficients of determination (Pseudo R^2) for Regressions 1 and 2 are 0.512 and 0.465, respectively, suggesting that the variables in Regression 1 (Regression 2) account for approximately 51.2 (46.5) of variations in the dependent variable. Furthermore, the likelihood ratio test assessed the goodness of fit of the two competing statistical models. The likelihood ratio test evaluates the overall relationship between independent and dependent variables. The likelihood ratio statistic is significant (significance < 0.01), which shows there is a statistically significant relationship between the independent and dependent variables and that the independent variables play a significant role in the GCOP. The findings showed that CSC (significance < 0.01 and coefficient = -0.021) significantly reduced GCOP. Therefore, *H1* is accepted. To interpret the findings in practice, for example, a coefficient of -0.021 on CSC suggests that a one-unit increase in the CSC index reduces the predicted probability of receiving a GCOP by approximately 2.1%, holding other factors constant. Additionally, the results of Regression 2 show that COVID-19 significantly strengthens the negative effect of CSC on the probability of a GCOP ($-0.017 + (-0.028) > -0.028$). Therefore, *H2* can be accepted.

4.3 Additional analyses

4.3.1 *Bootstrap method.* Equations (1) and (2) were estimated using the bootstrap method, as presented in Table 5. As shown in Table 5, the findings of Regression 1 show that CSC (significance < 0.1 and coefficient = -0.019) has a significant negative effect on the probability of a GCOP. Moreover, the results of Regression 2 show that COVID-19 strengthens the negative effect of CSC on the probability of a GCOP ($-0.031 + (-0.013) > -0.013$). Therefore, the results of this test are consistent with those in the related literature.

4.3.2 *Using $t + 1$.* Some studies use $t + 1$ as the dependent variable to capture the effect of an independent variable at a future time point, rather than simultaneously. Moreover, endogeneity occurs when the dependent variable is influenced by unobserved factors that affect the independent variables. Using $t + 1$, researchers reduce the risk of reverse causality (where the dependent variable influences the independent variable) and improve causal inference. Moreover, certain phenomena showed lagged responses. Using $t + 1$ accommodates these lagged effects: Hence, in predictive models, $t + 1$ aligns with forecasting objectives. Through structuring models in this manner, researchers hope to better understand the temporal dynamics, solve simultaneity problems and improve the robustness of their analyses. A binary

Table 4. Analysis of logistic regression and simple method for hypotheses testing

Dependent variable: GCOP	Regression 1 Coefficient Wald statistic Significance	Regression 2 Coefficient Wald statistic Significance
<i>Variable</i>		
CSC	-0.021 9.267 0.002***	-0.028 13.049 0.000***
COVID		-0.326 8.090 0.004***
CSC × COVID		-0.017 5.172 0.023**
SIZE	0.194 7.751 0.005***	0.110 2.131 0.144
LOSS	0.604 6.602 0.011**	0.570 5.810 0.016**
TENURE	-0.128 1.628 0.202	-0.140 1.933 0.164
ROA	-1.981 14.466 0.000***	-2.261 18.053 0.000***
AUDIT SIZE	0.410 6.962 0.008***	0.483 9.351 0.002***
AUDIT LAG	-0.540 16.669 0.000***	-0.562 17.843 0.000***
P/E	0.001 11.146 0.001***	0.001 8.421 0.004***
ROS	-0.754 4.372 0.037**	-0.769 4.519 0.034**
_cons	1.775 7.249 0.007***	2.337 11.470 0.001***
Observations	1930	1930
Wald statistic	1231.820***	1189.320***
Pseudo R ²	0.512	0.465

Note(s): ** and *** indicate statistical significance at the 5 and 1% levels, respectively

Source(s): Authors' own work

logistic regression analysis based on $t + 1$ is presented in Table 6. The results showed that CSC (significance < 0.05 and coefficient = -0.009) had a significantly negative impact on the probability of a GCOP. Additionally, COVID-19 strengthened the negative effect of CSC on the probability of a GCOP ($-0.013 + (-0.014) > -0.014$). Consequently, using $t + 1$ as the dependent variable supports the previous findings.

Table 5. Analysis of logistic regression and bootstrap method for hypotheses testing

Dependent variable: GCOP		Regression 1 Coefficient Wald statistic Significance	Regression 2 Coefficient Wald statistic Significance
<i>Variable</i>			
CSC		-0.019 3.201 0.074*	-0.013 5.812 0.016**
COVID			-0.336 8.488 0.004***
CSC × COVID			-0.031 6.538 0.011**
SIZE		0.233 10.921 0.001***	0.146 3.707 0.054*
LOSS		0.554 5.436 0.020**	0.513 4.646 0.031**
TENURE		-0.139 1.907 0.167	-0.151 2.234 0.135
ROA		-1.937 13.782 0.000***	-2.219 17.273 0.000***
AUDIT SIZE		0.447 8.152 0.004***	0.521 10.672 0.001***
AUDIT LAG		-0.515 15.170 0.000***	-0.534 16.096 0.000***
P/E		0.001 9.649 0.002***	0.001 6.933 0.008***
ROS		-0.724 4.040 0.044**	-0.737 4.157 0.041**
_cons		1.368 4.274 0.039**	1.919 7.675 0.006***
Observations		1930	1930
Wald statistic		1,314.190***	1,249.210***
Pseudo R ²		0.495	0.425

Note(s): *, ** and *** indicate statistical significance at the 10, 5 and 1% levels, respectively

Source(s): Authors' own work

4.3.3 Control function approach. The control function approach is applied to test whether the main independent variable CSC is endogenous (Wooldridge, 2015) – that is, whether it is correlated with the error term in the logistic regression predicting GCOP. Endogeneity is present if residuals from the first-stage regression are statistically significant in the second-stage logit model. The results of the control function approach are presented

Table 6. Analysis of logistic regression based on t + 1 for hypotheses testing

Dependent variable: GCOP	Regression 1 Wald statistic Significance Coefficient	Regression 2 Wald statistic Significance Coefficient
<i>Variable</i>		
CSC	−0.009 6.603 0.011**	−0.014 3.609 0.057*
COVID		−0.453 13.515 0.000***
CSC × COVID		−0.013 3.196 0.074*
SIZE	0.162 4.607 0.032**	0.066 0.677 0.411
LOSS	0.576 5.950 0.015**	0.504 4.517 0.034**
TENURE	−0.187 3.113 0.078*	−0.197 3.413 0.065*
ROA	−1.325 5.564 0.018**	−1.742 9.145 0.002***
AUDIT SIZE	0.479 8.743 0.003***	0.567 11.839 0.001***
AUDIT LAG	−0.429 9.642 0.002***	−0.466 11.167 0.001***
P/E	0.002 13.649 0.000***	0.001 9.983 0.002***
ROS	−0.983 6.343 0.012**	−1.001 6.535 0.011**
_cons	1.419 4.133 0.042**	2.121 8.510 0.004***
Observations	1,930	1,930
Wald statistic	1,317.430***	1,326.740***
Pseudo R ²	0.463	0.469

Note(s): *, ** and *** indicate statistical significance at the 10, 5 and 1% levels, respectively

Source(s): Authors' own work

in Table 7. The results show that the residuals from the first stage of Regression 1 are statistically insignificant ($p = 0.802$). This provides clear evidence that CSC is exogenous in the baseline specification and that there is no endogeneity bias. Thus, the CSC coefficient (−0.019 and $p = 0.007$) in the logistic regression was reliable and consistent. This suggests

Table 7. The results of control function approach

Dependent variable: GCOP	Regression 1	Regression 2
	Coefficient z-value Significance	Coefficient z-value Significance
<i>Variable</i>		
CSC	-0.019 -2.714 0.007***	-0.020 -2.500 0.012**
COVID		-0.211 -2.089 0.037**
CSC × COVID		-0.016 -2.286 0.022**
SIZE	0.079 2.548 0.011**	0.085 2.576 0.010**
LOSS	0.453 2.503 0.012**	0.461 2.452 0.014**
TENURE	-0.198 -2.129 0.033**	-0.213 -2.196 0.028**
ROA	-1.874 -3.809 0.000***	-1.888 -3.745 0.000***
AUDIT SIZE	0.529 1.952 0.051*	0.537 1.953 0.051*
AUDIT LAG	-0.227 -2.102 0.036**	-0.241 -2.114 0.035**
P/E	0.003 2.856 0.004***	0.003 2.789 0.005***
ROS	-0.665 -2.409 0.016**	-0.699 -2.402 0.016**
Residuals (from the first-stage model)	0.001 0.250 0.802	0.002 0.500 0.617

Note(s): *, ** and *** indicate statistical significance at the 10, 5 and 1% levels, respectively
Source(s): Authors' own work

CSC reduces GCOP, even without the moderating role of COVID. This finding is fully aligned with the results of the logistic regression and simple method in [Table 4](#).

Moreover, the results show that the residuals from the first stage of Regression 2 are statistically insignificant ($p = 0.617$). This confirms no evidence of endogeneity in CSC, even after including COVID and its interaction term. The CSC coefficient remains negative and significant ($\beta = -0.020$ and $p = 0.012$), which is consistent with Regression 1. COVID is now explicitly included as an independent variable. Its coefficient is negative and significant

($\beta = -0.211$ and $p = 0.037$), indicating that the pandemic environment decreases the GCOP independently of CSC. This can justify the fact that COVID-19 can offer an opportunity for organizations to reassess their methods, highlighting the importance of flexibility, resilience and a greater emphasis on short-term adaptability while maintaining attention to long-term objectives. The interaction effect (CSC $\times$ COVID) was negative and significant ($\beta = -0.016$ and $p = 0.022$), indicating that the negative impact of CSC on GCOP became stronger under the COVID conditions. This can justify the fact that strategic responses during crisis periods reduce the likelihood of going-concern warnings even more.

5. Discussion

This study aimed to explore how CSC affects the GCOP under both normal and crisis conditions, particularly during the COVID-19 pandemic. The first significant finding reveals that CSC is significantly and negatively associated with the GCOP, indicating that when firms initiate visible strategic change, auditors are less likely to doubt the firm's ability to continue as a going concern. This finding aligns closely with the interaction of the signaling theory (Spence, 1973) and upper echelons theory (Hambrick and Mason, 1984), suggesting that firms can use qualities such as management competence, top executives' strategic choices, adaptability and planning to signal performance qualities. Furthermore, in line with the dynamic managerial capability theory, which emphasizes the role of managerial skills, perception and motivation in sensing opportunities, seizing them and transforming the organization (Adner and Helfat, 2003; Baishya *et al.*, 2025), the strategic direction should be based on cultivating dynamic managerial capabilities that prioritize a shared understanding of long-term goals, involve stakeholders and establish clear objectives (Nijhof *et al.*, 2019); these actions can be a sign of innovation and an effort to improve the company's performance (Bruynseels and Willekens, 2012; Guo *et al.*, 2022), all associated with a lower likelihood of GCOPs (Guo *et al.*, 2022). Moreover, strategic actions, such as restructuring, new investment initiatives, market repositioning or reallocation of capital, often serve as credible signals to stakeholders (Connelly *et al.*, 2010; Verbeke and Yuan, 2025; Zhan *et al.*, 2025) – including auditors, managerial foresight and proactive governance. In uncertain environments, these signals become particularly valuable, as they reduce the information asymmetry between management and auditors (Connelly *et al.*, 2010).

Using the control function approach (Wooldridge, 2015), the study tested for potential endogeneity of CSC. The results confirm that CSC is exogenous in econometric models: residuals from the first-stage regressions are statistically insignificant ($p = 0.802$; $p = 0.617$), indicating no omitted variable bias or reverse causality. This finding is of theoretical importance. This supports the premise that CSC is not a reactive outcome of prior auditor behavior or audit expectations (Bowlin, 2011) but rather an independent managerial decision that influences subsequent audit judgments. This conclusion aligns with the assumptions in the strategic management literature, which view strategic renewal and strategic change as a deliberate, planned process in response to environmental dynamism (Joussen *et al.*, 2025; Tushman and Romanelli, 1985), reinforcing that CSC originates from the management's discretionary choice (Andrus *et al.*, 2023) rather than the auditor's influence. Furthermore, these findings enhance the robustness of empirical results and further support the audit judgment-performance framework, which shows that audit outcomes are shaped by both quantitative indicators and qualitative management behavior (Griffith *et al.*, 2021; Knechel *et al.*, 2015; Ricci and Rimkus, 2025). The evidence suggests that strategic change is not only a determinant of firm performance but also auditor perceptions, reinforcing the behavioral aspect of audit decision-making (Durmuş and Gorcun, 2025).

The extended model introduced an interaction term $CSC \times COVID$ to test whether the impact of CSC was contingent on environmental turbulence (i.e. COVID-19). The results showed a significantly negative interaction, indicating that CSC had a stronger mitigating effect on GCOP during the COVID-19 crisis. This outcome is supported by the fact that entrepreneurship thrived during COVID-19, with businesses converting challenges into opportunities through product innovation, leading to enhanced competitiveness and performance (Akpan *et al.*, 2024). As companies use new approaches to address a crisis, auditors may perceive these changes favorably, which could reduce the probability of issuing a GCOP.

Besides, the interaction can be interpreted through the lens of institutional theory and crisis management literature. In institutionalized environments, such as audits, decision-makers often rely on symbolic cues to assess organizational legitimacy (Milne and Patten, 2002; Stolowy *et al.*, 2019; Suchman, 1995). During crises, firms show strategic proactiveness, signal resilience and adaptability during crises. According to the adaptation theory concerning the mechanisms of adaptive behavior, this adaptation is not merely an independent action. However, it is also affected by the collective behavior of organizations (Feng and Liu, 2024), thereby gaining institutional approval. This supports the argument of Wenzel *et al.* (2020), who suggest that strategic responsiveness during crises enhances perceived organizational credibility. Therefore, COVID-19 offers organizations a chance to re-evaluate their methods, highlighting the importance of flexibility, resilience and a greater emphasis on short-term adaptability while still taking long-term objectives into account.

Moreover, the COVID-19 variable itself showed a negative and significant direct effect on the GCOP, implying an opportunity for organizations to reassess their methods, highlighting the importance of flexibility and resilience and a greater emphasis on short-term adaptability while maintaining attention to long-term objectives. Numerous opportunities for significant enhancements exist if managers opt to draw lessons from both COVID-19 experiences and past initiatives (Grant and Wunder, 2021). This also supports the argument that the COVID-19 pandemic affects companies' audits, specifically how auditors make GCOP decisions (Khalil, 2025; Wang *et al.*, 2025), which can be explained from economic and psychological perspectives (Wang *et al.*, 2025).

The results can also be consistent with the stakeholder theory (Freeman, 1984), so that management must manage expectations across multiple stakeholders, including auditors, especially during crises (Gao *et al.*, 2025; Leoni *et al.*, 2021). Strategic actions that prioritize continuity, solvency and risk management signals account for stewardship (Nijhof *et al.*, 2019), which in turn may influence auditor confidence and the perceived appropriateness of issuing GCOPs. These insights are crucial to audit practitioners and regulators. They highlight the significance of qualitative strategic cues, not just financial ratios, when forming audit opinions. This finding suggests that auditing standards may benefit from more explicit guidance on evaluating strategic decisions and their implications for the going-concern risk.

6. Conclusion

6.1 Implications

This study contributes to the literature in several ways. By empirically establishing that CSC significantly affects GCOP, this study integrates the signaling theory with the audit judgment-performance framework. It shows that auditors can systematically interpret CSC as signals of risk or resilience, which may affect GCOP. Using the control function approach, this study confirms that CSC is statistically exogenous, meaning that prior auditor actions or expectations do not influence CSC. This strengthens the theoretical argument that CSCs are independent managerial responses, not reactive artifacts and can be aligned with strategic

renewal theory (Tushman and Romanelli, 1985). The significant negative interaction between CSC and COVID-19 reveals that environmental turbulence intensifies the signaling effect of strategic actions. This finding contributes to the crisis management theory (Wenzel *et al.*, 2020), showing that strategic adaptation affects not only internal outcomes but also external assessments, such as audit opinions. This framework helps managers systematically evaluate their strategic options during crises and make more effective decisions on survival, growth or exit, which can affect the GCOP. This study also provides stronger empirical support for the directionality of these effects, showing that CSC precedes GCOP decisions.

The results have significant implications for managers, auditors and investors. Managers should recognize that executing proper strategic changes can shape auditors' perceptions of going-concern judgments, reducing the probability of receiving a GCOP. Especially in crisis periods, managers should proactively explain to auditors how their strategic actions are designed to safeguard going-concern status. This can build trust and reduce the conservative bias in auditor judgments. However, firms undergoing strategic changes need to carefully evaluate how auditors view these modifications to reduce possible adverse effects on their evaluations. Auditors may interpret the absence of a strategic response under crisis conditions as a red flag, potentially leading to greater scrutiny or even increasing the probability of an auditor issuing a GCOP.

This study shows that auditors should consider CSC in forming going-concern judgments, especially during crises, such as the COVID-19 pandemic, and may perceive such changes as the evidence of forward-looking risk mitigation and organizational resilience. Although COVID-19 poses significant challenges, it can provide opportunities for strategic change and affect auditors' perceptions of GCOPs.

For investors, this implies that strategic action is a credible leading indicator of management's intent to ensure continuity and adapt under pressure. This study finds that the interaction between CSC and COVID-19 has a stronger mitigating effect on GCOP, suggesting that during turbulent times, investors should track how firms strategically adapt to crises rather than react to temporary financial underperformance.

This study provides timely, policy-relevant insights. In this regard, we can refer to the reports by the Financial Times in 2024 on collapses in the UK and increased audit shortcomings, high-profile business failures and the systemic financial and regulatory challenges facing UK companies. In most of these cases, auditors did not adequately warn about financial distress or impending insolvency, raising concerns about the effectiveness of audit oversight in the UK. Hence, recognizing corporate strategic behavior as an audit-relevant signal may enhance the credibility, timeliness and transparency of audit judgments. Policymakers and regulators should update auditor training programs to include qualitative business indicators, such as strategic investment decisions or structural changes, as part of a going-concern risk analysis. They should consider incorporating strategic change variables into audit risk assessment models or audit planning templates to help identify at-risk firms before financial distress materializes. This issue can help CPAs make appropriate GCOP choices and reduce their chances of facing punishment or lawsuits.

6.2 Limitations and directions for future studies

Despite the robustness of findings and the rigor of methodology, this study has some limitations, which will help enhance research opportunities. CSC measurement depends on proxy measures of observable events or corporate disclosure. While these are theoretically grounded, they may not capture the full depth of or intention behind strategic decisions and may not capture the full range of strategic initiatives. Using different proxies to evaluate CSC may yield varying results. Future research could enhance CSC measurement through the

machine learning of press releases or executive interviews, offering more granular and nuanced insights into strategic intent.

While this study confirms that CSC affects going-concern decisions, it does not fully account for auditors' ethical issues and individual auditor characteristics such as risk aversion, industry expertise or audit firm culture. Future research could disaggregate audit responses by engagement partner identity, firm size and audit committee pressure to better understand heterogeneity in auditor judgment.

Although the COVID-19 pandemic offers a valuable natural experiment for testing the moderating role of external crises, it is a unique and unprecedented event. The results may not be generalizable to other types of crises (e.g. geopolitical, cyber or environmental). Future research should address these issues. Moreover, the effectiveness and generalizability of the decision table used to predict GCOPs can be affected by varying operational frameworks, financial statement data and management structures of assets and capital across different types of businesses. Although there are several models for predicting ongoing concerns, their forecasting capability can be influenced by the changing economic circumstances, financial reporting regulations and business methodologies. Future research should investigate how various models use data from different timeframes and countries.

The present study focuses exclusively on Iranian firms; thus, the findings primarily show the traits of Iran's economic and business environment. Future studies may provide important insights into strategic change and the probability of an auditor's opinion of going a concern in different settings. To enhance our understanding, future research should explore the contextual subtleties that could influence these relationships.

This study centers on CSC, GCOP and COVID-19 but does not investigate how capital markets interpret strategic change in conjunction with the going concern. Future research could analyze this issue to uncover the investor's perspective.

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