

Designing an Organizational Decision-Making Mechanism in Iran's Oil and Gas Industry: A Behavioral Game Theory Approach

Mojtaba. Asgharnia¹, Vahid. Mahmodi^{2*}, Ezzatollah. Abbasian³

¹ PhD Student , Department of Financial management and insurance , Faculty of Management , Tehran University , Tehran , Iran

² Professor, Department of Financial markets and institutions , Faculty of Management , Tehran University , Tehran , Iran

³ Professor, Department of Financial engineering , Faculty of Management , Tehran University , Tehran , Iran

* Corresponding author email address: vmahmodi@ut.ac.ir

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ABSTRACT

The present study investigates organizational decision-making mechanisms and strategic contracts in Iran's oil and gas industry through the lens of behavioral game theory. Given the complexity and significance of decision-making in this industry, the study was conducted using a qualitative, exploratory approach. Data were collected through observation, in-depth interviews with experts in Iran's oil and gas industry, and simulations of managerial decision-making through experimental tests administered to students at universities in Tehran. The findings indicated that improving the decision-making process requires appropriate infrastructures for selecting qualified individuals, establishing suitable mechanisms at both micro and macro levels, and presenting information within an appropriate framework as structural controls. In addition, three behavioral dimensions were identified as behavioral controls: continuous vigilance during decision-making, accurate understanding and interpretation of relevant narratives and texts, and the resolution of conflicts of interest at personal and organizational levels. The results demonstrate that, given the complex and sensitive nature of decision-making in strategic contracts, the application of this model can significantly enhance the efficiency and effectiveness of managerial decisions and strengthen overall organizational performance.

Keywords: behavioral economics, organizational decision-making, corporate governance, game theory, experimental economics, oil and gas industry

1. Introduction

Organizational decision-making is a central mechanism through which organizations interpret environmental conditions, allocate resources, manage risks, resolve conflicts, and translate strategic objectives into operational action. The quality of organizational performance is

therefore closely associated with the quality, speed, consistency, and legitimacy of managerial decisions. This relationship becomes particularly important in industries characterized by high capital intensity, technological complexity, regulatory sensitivity, interorganizational dependence, and substantial operational risks. In such settings, managerial decisions are rarely limited to choosing

among clearly defined alternatives with complete information. Instead, managers must frequently act under conditions of uncertainty, time pressure, incomplete authority, conflicting interests, ambiguous responsibilities, and potentially irreversible consequences. Strategic management research accordingly regards decision-making not as an isolated managerial function but as an integral component of organizational performance, strategic implementation, and institutional adaptation (Chorli & Kazemi, 2023; Hamidian & Dastanpour Hosseinabadi, 2024).

The oil and gas industry represents one of the clearest examples of such a decision environment. Projects in this industry involve extensive financial commitments, long contractual horizons, specialized technical knowledge, interactions among employers, contractors, regulators, investors, and public institutions, and exposure to operational, environmental, political, and market-related uncertainties. A single delayed or inappropriate decision may interrupt production, increase project costs, intensify safety risks, create contractual disputes, or cause substantial damage to organizational assets and public interests. Moreover, managerial decisions in oil and gas organizations are often made within complex hierarchical structures in which formal authority, operational responsibility, accountability, and access to information are not necessarily concentrated at the same organizational level. Managers may consequently be expected to respond immediately to a crisis while simultaneously complying with administrative procedures and anticipating the reactions of superior decision-making bodies.

Traditional approaches to organizational decision-making have commonly been grounded in models of rational choice. These models generally assume that decision-makers possess relatively stable preferences, identify the available alternatives, evaluate their likely consequences, and choose the option that maximizes expected utility. From this perspective, organizational mechanisms should be designed to ensure that managers receive sufficient information, understand the available incentives, and select the alternative that produces the greatest benefit or minimizes the greatest loss. Rational choice remains an important analytical benchmark because it makes it possible to compare alternatives, formulate strategic priorities, and evaluate deviations from mathematically optimal behavior. Nevertheless, the concepts of rationality and freedom are more complex than the assumption that individuals consistently calculate and maximize measurable interests,

particularly when decision-makers face institutional constraints, uncertainty, moral considerations, or competing interpretations of responsibility (Mahmoudi & Beheshti, 2019).

Research on behavioral economics has challenged the descriptive adequacy of models based exclusively on complete rationality. Behavioral economics demonstrates that human judgments and decisions are shaped by cognitive limitations, heuristics, reference points, framing effects, loss aversion, social preferences, emotions, narratives, and perceptions of fairness and responsibility. These findings do not imply that decision-makers are wholly irrational; rather, they show that actual decisions systematically differ from the predictions of conventional economic models. Behavioral law and economics extends these insights to the design, interpretation, and enforcement of legal and institutional rules. It examines how laws, contracts, organizational procedures, and regulatory arrangements interact with predictable patterns of human behavior (Engel, 2021; García-Tejeda, 2023). This approach is particularly relevant when formal rules are expected to guide individuals who may interpret risks and incentives differently from the assumptions embedded in institutional designs.

The application of behavioral economics to legal and regulatory systems has generated considerable debate. One perspective argues that behavioral evidence can improve institutional design by identifying predictable decision errors and developing mechanisms that help individuals make more effective choices. Behavioral insights have consequently been applied to public policy, healthcare systems, competition policy, consumer protection, and regulatory decision-making (Ireland, 2021; Sorum et al., 2023). Another perspective warns that the behavioral approach may justify excessive paternalism if policymakers presume that they can identify and correct the preferences or errors of others without adequately considering institutional limitations and individual autonomy (Rizzo, 2021). The law and economics of behavioral regulation therefore requires careful consideration of both the benefits of behaviorally informed mechanisms and the risks of overconfident intervention (Tor, 2022). For organizational decision-making, this debate suggests that behavioral controls should not merely replace managerial judgment but should create conditions under which judgment is more informed, transparent, accountable, and consistent with organizational objectives.

One of the major contributions of behavioral research is its explanation of how the presentation and interpretation of

information affect decisions. Managers do not respond solely to objective numerical outcomes; they also respond to the language, structure, sequence, and narrative through which those outcomes are communicated. Narratives can shape expectations, define perceived threats, legitimize specific courses of action, and influence how decision-makers interpret uncertainty. Narrative economics emphasizes that stories and collectively transmitted interpretations can influence economic choices and major institutional developments, even when the underlying material conditions remain unchanged (Shiller, 2019). Within organizations, narratives concerning loyalty, obedience, urgency, professional responsibility, safety, or managerial courage may influence whether a manager follows formal procedures, assumes operational risk, delays action, or challenges the preferences of superior authorities.

Communication is therefore not a neutral channel through which decision information is transmitted. Strategic decisions may be affected by selective disclosure, ambiguity, persuasion, misrepresentation, and the anticipated reactions of other organizational actors. Experimental evidence on sender–receiver interactions indicates that individuals may engage in deceptive communication when incentives make such behavior advantageous, although sensitivity to moral costs differs across individuals (Vranceanu & Dubart, 2019). Organizational climate also affects communication, conflict management, and decision-making processes because employees interpret information and express disagreement within the broader environment of trust, authority, and interpersonal relationships (Augustine & Bora, 2024). Consequently, the effectiveness of a decision-making mechanism depends not only on the availability of information but also on whether that information is communicated accurately, interpreted appropriately, and protected from strategic distortion.

Organizational culture constitutes another major determinant of managerial judgment. Culture influences how organizational members understand authority, risk, innovation, cooperation, accountability, and acceptable conduct. A culture that discourages disagreement or penalizes unsuccessful initiatives may generate excessive caution and delayed decisions, even when rapid action is operationally necessary. Conversely, a culture that rewards unrestrained risk-taking may lead managers to ignore formal controls and underestimate organizational exposure. Research has shown that organizational culture can contribute to intelligent market adaptation through

collaborative decision-making (Chen et al., 2023). It can also support or obstruct digital innovation, depending on whether cultural conditions facilitate learning, flexibility, and informed evaluation of emerging technologies (Hedayatvand et al., 2023). Thus, decision-making mechanisms must be compatible with the cultural and institutional context in which managers interpret their roles.

Participation in decision-making can strengthen organizational commitment because it provides organizational members with a sense of influence, recognition, and procedural legitimacy. Employee participation may improve the quality of decisions by incorporating operational knowledge that is not available at higher organizational levels (Ichdan, 2023). Studies in educational organizations similarly indicate that participative decision-making has implications for organizational commitment and workplace behavior (Nassir & Benoliel, 2025). However, participation alone does not eliminate conflict. Organizational decisions often involve competing values, identities, priorities, and interpretations of fairness. Conflict dynamics may become embedded in the decision process when organizational groups disagree not only about preferred outcomes but also about the legitimacy of the rules by which those outcomes are determined (Michalowski & Schmidt, 2025). Effective decision structures must therefore balance participation with clearly defined authority, responsibility, and mechanisms for resolving disagreement.

Recent technological developments have further transformed organizational decision-making. Digital systems, data analytics, artificial intelligence, blockchain, and financial technologies have expanded the capacity of organizations to collect information, predict outcomes, coordinate stakeholders, and automate elements of managerial judgment. Data-driven decision-making can strengthen human resource functions by enabling organizations to identify patterns, evaluate performance, and allocate resources more systematically (Varma & Dutta, 2023). Artificial intelligence may also influence strategic managerial decisions by improving information processing, although its organizational effects depend on transparency, reporting mechanisms, and the willingness of employees to communicate critical information (Tajabadi & Moazami, 2024). Blockchain-based systems have been proposed as mechanisms for privacy-preserving voting and collective decision-making in interorganizational collaboration, particularly where multiple organizations require both coordination and protection of sensitive information (Bettini

de Miranda et al., 2024). Nevertheless, technological sophistication cannot independently resolve behavioral problems, because the interpretation and use of technological outputs remain subject to managerial incentives, cognitive biases, organizational culture, and institutional power.

The integration of behavioral finance and financial technology also demonstrates how technological tools and behavioral insights can jointly support strategic decisions. Such integration may improve the analysis of risk and investor behavior while recognizing that decision-makers do not respond mechanically to financial information (Abdeldayem & Aldulaimi, 2025). Financial decisions can have direct consequences for productivity and organizational performance, particularly in capital-intensive industries where investment choices, financing structures, and resource-allocation decisions shape long-term competitiveness (Yousefi & Hashemi, 2023). However, even sophisticated financial models may fail to predict actual managerial behavior when decision-makers perceive losses and gains asymmetrically, respond to organizational pressure, or prioritize personal accountability over expected organizational value.

Game theory provides a useful framework for analyzing these strategic interactions because it examines decisions in situations where the outcome for each actor depends not only on their own choice but also on the choices, beliefs, and anticipated reactions of others. Organizational decisions frequently possess this interdependent structure. Managers anticipate how boards of directors, contractors, regulators, employees, and other stakeholders will respond, while those stakeholders simultaneously evaluate managerial actions. Game-theoretical models can identify dominant strategies, equilibrium conditions, incentive incompatibilities, and the consequences of alternative institutional arrangements. Yet conventional game theory often assumes a level of strategic rationality that may not accurately describe real behavior. Behavioral game theory addresses this limitation by incorporating empirically observed patterns such as inequity aversion, bounded reasoning, conditional cooperation, punishment, belief formation, and sensitivity to gains and losses.

Public-goods games have been particularly influential in showing that cooperation cannot be explained solely by material self-interest. Cooperative behavior depends on both individual preferences and beliefs regarding the likely contributions of others (Ackermann & Murphy, 2019). Individuals may cooperate because they value collective

outcomes, expect reciprocal behavior, or wish to avoid social or institutional sanctions. Beliefs about sanctions can increase cooperation even when sanctions are not applied in every interaction (Yamamoto & Suzuki, 2018). Similarly, peer punishment can sustain cooperation, although behavioral responses to punishment are influenced by prospect-theoretical evaluations of gains and losses (Uchida et al., 2019). These findings are relevant to organizations because managerial compliance, initiative, and cooperation may depend on perceived expectations and sanctions rather than only on formal compensation.

The timing and structure of punishment also matter. Delayed punishment and delayed feedback may produce different effects from immediate sanctions, influencing both cooperation and overall efficiency (Waichman & Stenzel, 2019). In organizational settings, a manager may discount the possibility of a future reprimand, overestimate the reputational consequences of an unsuccessful decision, or interpret delayed evaluation as uncertainty regarding organizational priorities. These behavioral responses are important in crisis decisions, where the consequences of immediate action may be visible while institutional approval or punishment occurs later. A formally optimal incentive mechanism may therefore be ineffective if it does not account for how managers psychologically perceive the timing, probability, and severity of organizational reactions.

Individual characteristics further contribute to variation in managerial decisions. Judgment is affected not only by technical expertise but also by emotional, organizational, and spiritual intelligence, all of which may influence how decision-makers interpret responsibility, uncertainty, and ethical considerations (Ahmadi & Pourzamani, 2024). Personal values and belief systems can also shape decisions regarding morally contested issues, demonstrating that organizational choices are not always reducible to economic calculation (Soares et al., 2023). In volatile, uncertain, complex, and ambiguous environments, leaders require cognitive skills that enable them to recognize changing conditions, integrate diverse information, revise assumptions, and act despite incomplete knowledge (Hafeznia & Ansari, 2025). Accordingly, organizational decision-making mechanisms must consider not only the formal structure of decisions but also the capabilities and behavioral dispositions of the individuals appointed to decision-intensive positions.

These considerations are especially important in Iran's oil and gas industry, where decision-makers operate within hierarchical organizations, strategic contractual

relationships, regulatory constraints, and conditions of economic and operational uncertainty. A manager responding to an urgent incident may confront a conflict between procedural compliance and the protection of organizational assets. If the manager acts without formal authorization, the organization may avoid substantial damage, but the manager may face institutional criticism or personal penalties. If the manager delays action until authorization is obtained, formal accountability may be preserved while operational losses increase. Such situations cannot be adequately understood through technical analysis alone because the decision depends on perceptions of authority, loss, responsibility, organizational loyalty, probable sanctions, and the anticipated behavior of superior decision-makers.

Despite the growing literature on organizational decision-making, behavioral economics, behavioral regulation, participative management, data-driven systems, and experimental games, limited attention has been paid to the combined use of behavioral game theory for designing organizational decision mechanisms in strategic oil and gas settings. Existing studies illuminate separate dimensions of decision-making, including organizational climate, culture, participation, technological support, cognitive skills, financial incentives, communication, cooperation, punishment, and regulatory design. However, there remains a need for an integrated model that explains how structural controls and behavioral controls can jointly reduce deviations from strategically desirable decisions. Such a model should address the selection of decision-makers, delegation of authority, alignment of incentives, framing of information, interpretation of organizational narratives, conflict of interest, and continuous behavioral vigilance during high-stakes decisions.

Accordingly, the aim of the present study is to design an organizational decision-making mechanism for strategic contracts in Iran's oil and gas industry based on behavioral

game theory and to identify the structural and behavioral controls required to improve the effectiveness of managerial decisions.

2. Methods and Materials

The present article examines decision-making in organizations using the theory of behavioral law and economics, which is itself a type of non-theory. The research method employed in this article was an experimental test. As discussed in the previous section, game theory, because of its considerable analytical capabilities, provides valuable information for examining such contractual situations and corresponds relatively closely with real-world experiences.

Although observable behavior that can be economically evaluated occurs in countless forms, the present experiment selected a fire incident as its example because it represents an ordinary, immediate, and seemingly self-evident decision in everyday life. All individuals selected as the research sample were Iranian students from different academic disciplines at universities located in the Tehran metropolitan area. In conducting the experiment, every effort was made to observe all ethical considerations while maintaining the confidentiality of participants' information. At the beginning of each experiment, informed consent was obtained from participants, and the confidentiality of their personal information and responses was emphasized. Under the mechanisms incorporated into the experimental design, participants had the right to withdraw from the study at any stage of the experiment. Participants were also paid a fixed attendance fee and, depending on the decisions made by each individual during the games, received an additional cash reward corresponding to the outcome of the game. These cash payments were designed and administered in accordance with the salience principle, meaning that they exceeded the average person-hour cost of the experimental participants.

Table 1

Participants' Work Experience and Familiarity With the Subject of the Experimental Test

Variable	Mean	Median
Work experience, years	2.68	1.25
Familiarity with the oil and gas industry, 1–10	2.92	2
Familiarity with game theory, 1–10	3.00	3

Table 2

Participants' Academic Disciplines and Number of Participants in the Experimental Test

Academic discipline	Number of participants
Engineering and technical fields	25
Management	29
Other fields	14

Question 1. In designing this decision scenario, an attempt was made to examine an intraorganizational strategic decision. When a crisis arises and an immediate decision is required despite insufficient authority, what should a manager do? Should the manager accept the risk that the board of directors may not approve the decision, or should the manager accept the risk of substantial damage to the interests of the organization and the company under their management?

In this decision scenario, the structure of intraorganizational decision-making differs between the two experiments. An organization is not an efficient, integrated entity capable of instantly coordinating, making decisions, and implementing them. Therefore, each participant must consider one of the fundamental and important principles of organizational activity: the requirement of accountability within the framework of the administrative and organizational hierarchy. On the other hand, the superior decision-making body is itself pluralistic and composed of multiple individuals. The company's board of directors may consist of several members with different mentalities and characteristics, while meeting dynamics may also affect their decisions. These considerations pass through the decision-maker's mind. Unlike an actual manager, the participant has no estimate of how the board of directors will respond. This issue is important to the design of the question. Therefore, whenever a manager can predict the board's reaction with a high degree of confidence, the risk of decision-making will

be reduced. In some situations, managers must make decisions without access to complete information because they do not have sufficient time to conduct research, evaluate the situation, or obtain permission from other individuals.

For simplicity, the reward figures represent the combined interests of the individual and the organization. Although this may initially appear to create ambiguity in understanding the question, it should be noted that many situations exist in which separating personal and organizational interests is difficult. For example, in the case of a fire at a project site, the interests of the manager and the organization are largely intertwined. Accordingly, if the organization suffers losses, the responsible manager will be reprimanded. For this reason, the question was formulated in this manner.

The purpose of this question was to examine decision-making within employer or contractor organizations. The probability distribution of success or failure was not disclosed. However, because the question provided no information concerning the board of directors' approach, many individuals may assume a 50–50 distribution, which is itself an example of a behavioral approach. Under this scenario, bypassing formal procedures results in a payoff of 0, whereas not making a decision results in a payoff of 5 million dollars. Conversely, the payoff range for making a decision is from positive 5 to negative 5, while the payoff range for not making a decision is from 0 to positive 10.

Table 3

Characteristics of Question 1

Characteristic	Description
Question	Question 1
Decision type	Sequential two-sided decision between the individual and the subordinate organization
Mechanism	The payoff depends on the individual's decision, the contractor's success or failure in extinguishing the fire, the resulting damage, and the decision made by the participant's organizational superior.
Allocation/probability/hidden mechanism	The superior's approval or disapproval is determined according to a 50–50 distribution.
Payoff range, thousand tomans	–5 to +10

Question 2. This question follows and resembles the previous question, except that the interests of the

organization and the manager are separated, although they remain aligned. In this case, the manager shares in the

benefits or losses according to the amount of profit or loss that the decision generates for the organization.

The first part of this question is similar to the previous question. The difference is that the manager now has both the authority and the duty to make the decision. Consequently, according to a resolution previously formulated and communicated, the manager's benefit is equivalent to 5% of the organization's benefit. In the event of a loss, the same proportion is deducted from the manager's personal compensation.

As can be observed, the difference between this game and the previous game is that, in the framing of the previous game, the manager had to confront both the crisis and the possibility of a reprimanding response from the board of directors. In the present game, however, the manager and the company jointly confront and respond to the crisis. The manager can focus entirely on optimizing a single outcome, thereby making the decision easier. Comparing the results of Questions 1 and 2 helps determine whether decision-making under conditions of delegated authority differs significantly from decision-making under conditions of ambiguity.

Table 4

Characteristics of Question 2

Characteristic	Description
Question	Question 2
Type	One-sided
Mechanism	The payoff depends on the individual's decision, the contractor's success or failure in extinguishing the fire, and the resulting damage.
Allocation/probability/hidden mechanism	The contractor's success or failure in extinguishing the fire is determined according to a 50–50 distribution.
Employer/contractor payoff range	–10 to +5

Before examining the results, an important issue is whether such questions have a Nash equilibrium under game theory and, more fundamentally, which strategy is logically and mathematically dominant. In other words, where a Nash

equilibrium or dominant strategy exists, which choice should an alert individual exhibiting rational behavior select?

Table 5

Evaluation of the Questions Based on Game-Theoretical Predictions

Question	Nash equilibrium	Dominant strategy
Question 1	None	Not making a decision
Question 2	None	Bypassing formal procedures

The table indicates that, when individuals evaluate the problem solely from a mathematical perspective, they should select the dominant strategy. This situation closely resembles intraorganizational decision-making conditions and therefore makes it possible to demonstrate the extent of deviation from rational decision-making.

3. Findings and Results

A careful examination of the results obtained from the experiment conducted in this study indicates that the decisions associated with Questions 1 and 2 are presented in two different formats. In practice, decisions in the oil and gas industry are not usually presented to managers explicitly in the form of extensive-form games. Therefore, managerial

decisions generally emerge from face-to-face or telephone negotiations or from managers' interpretations of the text and content of letters and emails.

In these two questions, the manager was initially confronted with an urgent and important decision for which no information was provided regarding the probability of success or failure. The other party was the board of directors of the company in which the manager worked. Therefore, the manager would clearly incorporate organizational interests, personal interests, and intraorganizational dynamics into the decision-making process. In practice, the decision is framed in the manager's mind or, ultimately, through notes and calculations made on paper or through consultation with colleagues.

Making the decision and accepting the associated risk, followed by either approval or rejection by the board of directors, results in either a benefit of 5 million dollars or a loss of 5 million dollars. The question explicitly states that this figure represents the combined interests of the individual and the organization. No additional information is provided, and any amount obtained is either added to or deducted from the individual's assets. The alternative is not to make a decision. If the board of directors is dissatisfied with this choice, no cost is imposed; however, if the board approves of the choice, it generates a benefit of 10 million dollars.

On the surface, if a 50% probability is assigned to the board of directors' response, not making a decision generates a greater benefit. Nevertheless, because the scenario involves a fire, the instinctive perception that a decision must be made appears more ethical. This is particularly true because intraorganizational decision-making in this scenario merely involves selecting a contractor and does not appear to generate any particular technical value.

Table 6

Participants' Responses and Decisions in the Experimental Test

Question or response category	Decision made	Number of participants	Dominant strategy
Question 1	Not making a decision	32	Not making a decision
Question 1	Bypassing formal procedures	36	Not making a decision
Combined performance across both questions	Dominated strategy in both questions	3	Bypassing formal procedures in Question 2
Combined performance across both questions	Dominant strategy only in Question 1	2	—
Combined performance across both questions	Dominant strategy only in Question 2	33	—
Combined performance across both questions	Dominant strategy in both questions	30	—

As shown in Table 6, a relative majority selected the more instinctive decision despite its lower payoff, even when doing so could result in losses for both themselves and their organizations. This finding provides a clear example of deviation from the assumptions of neoclassical economics.

In the subsequent game, the relationship between the individual and the board of directors was replaced by the success or failure of fire containment. The game payoff to the individual was equivalent to 5% of the income or cost incurred by the organization. Under both strategies, participants received a payoff of 5 in the event of success. In the event of failure, however, not making a decision reduced their assets by 10 thousand tomans, whereas bypassing formal procedures reduced their assets by 5 thousand tomans. Therefore, bypassing formal procedures was the dominant strategy, first because the interests of the organization and the individual were clearly separated and, second, because the contractor's probability of success exceeded 50%.

In Question 2, the majority of participants provided the correct response, although five participants selected the strategy of not making a decision. Of these five individuals, three had also selected not making a decision in Question 1.

On this basis, it may first be concluded that delegating authority in conjunction with incentives aligned with organizational interests facilitates better managerial decision-making. Nevertheless, a minority of participants—approximately 5%—continued to regard not making a decision as the more appropriate option. This tendency was probably rooted in personal dispositions rather than in the decision-making structure. In this regard, these participants appear to attach greater importance to compliance with organizational principles than to personal and organizational interests and to exhibit extreme risk aversion. In any event, individuals with such risk preferences and dispositions constitute part of the industry's managerial workforce. Appropriate mechanisms must therefore be developed either to modify their behavior or to screen such individuals when selecting personnel for executive or operational positions. In the oil and gas industry, given its distinctive characteristics and prevailing conditions, some failures to make decisions can produce substantial and irreparable costs.

As shown in Table 4, if individuals had adhered solely to calculations based on the information provided and the assumptions of complete rationality, an absolute majority should have selected not making a decision. However,

slightly more than half of the participants acted according to the instinctive choice of extinguishing the fire as quickly as possible. In practice, they accepted the potential consequences of formal opposition and the loss of personal incentives. Thus, a meaningful deviation from purely economic assumptions was observed when behavioral tendencies were not taken into account.

Furthermore, according to Table 6, approximately half of the participants in Question 1 selected not making a decision, which meant leaving the fire uncontrolled until a formal meeting could be convened. Whether this decision was rational or irrational depended on various cognitive components that were themselves influenced by the text or contextual implications of the question.

Given the deviations from rational decision-making observed in the experiment, a behavioral approach can help improve the proposed mechanisms. The wording or presentation of information may have misled participants who selected the dominated strategy. These individuals may have selected the options randomly, or cultural and industry-specific narratives may have shaped automatic choices in their minds. Accordingly, based on the findings of the present study, it is recommended that two categories of controls—behavioral controls and structural controls—be incorporated into the design of the organizational decision-making model and mechanism for Iran’s oil and gas industry, as illustrated in the following figures.

Figure 1

Behavioral Controls in Designing an Organizational Decision-Making Model and Mechanism for Iran’s Oil and Gas Industry

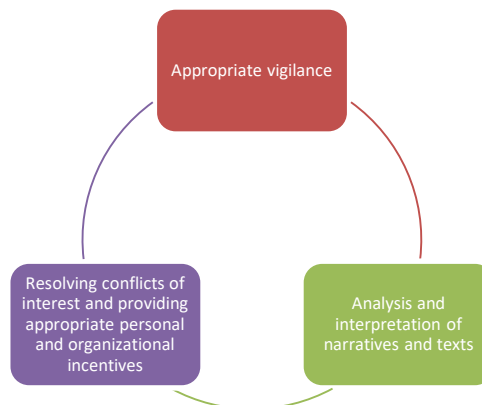
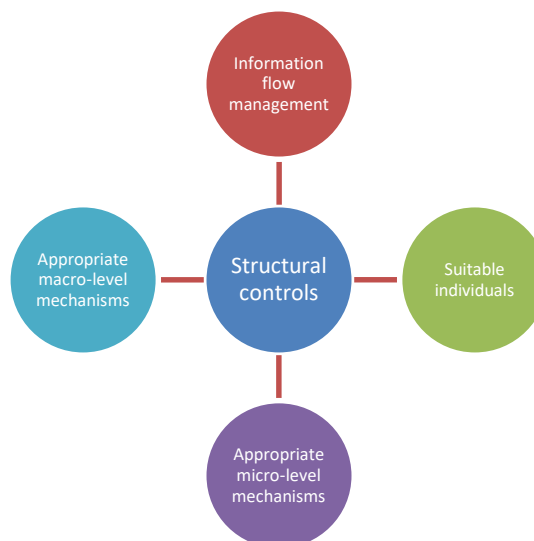


Figure 2

Structural Controls in Designing an Organizational Decision-Making Model and Mechanism for Iran’s Oil and Gas Industry



4. Discussion and Conclusion

The present study was conducted to design an organizational decision-making mechanism for Iran's oil and gas industry based on behavioral game theory and to identify the structural and behavioral controls required to improve managerial decision-making in strategic and crisis-related situations. The findings showed that participants' decisions did not consistently conform to the predictions of conventional rational-choice and game-theoretical models. In the first experimental scenario, not making a decision constituted the dominant strategy according to the stated payoff structure; nevertheless, slightly more than half of the participants selected the more immediate and intuitive option of bypassing formal procedures to extinguish the fire. In the second scenario, in which managerial authority was clarified and the manager's incentives were explicitly aligned with the organization's interests, most participants selected the dominant strategy. The comparison of the two scenarios therefore indicated that ambiguity in authority, fear of superior disapproval, the framing of the crisis, and the perceived moral urgency of action significantly influenced decision-making. On the basis of these results, the study identified two broad classes of mechanisms—structural controls and behavioral controls—as necessary components of an effective organizational decision-making model for Iran's oil and gas industry.

The first major finding was the considerable deviation from the mathematically dominant strategy in the initial decision scenario. Although not making a decision offered the more favorable expected payoff under the assumed probability distribution, a relative majority of participants preferred to act immediately and bypass formal procedures. This result suggests that individuals do not evaluate organizational decisions exclusively through formal calculations of expected utility. The dramatic framing of the situation as a fire created an intuitive perception that immediate intervention was the morally responsible and professionally appropriate course of action. This behavior is consistent with behavioral economic arguments that individuals rely on heuristics, emotional evaluations, reference points, and contextual interpretations when confronting uncertainty. Behavioral law and economics similarly emphasizes that actual responses to institutional rules may differ substantially from the conduct predicted by standard economic models (Engel, 2021; García-Tejeda, 2023). Therefore, the divergence observed in the first game

should not be understood merely as a calculation error; rather, it reflects the interaction between formal incentives and the behavioral meaning attributed to the decision context.

This finding also supports the argument that narratives influence economic and organizational behavior. The fire scenario was not a neutral representation of numerical gains and losses. It evoked a narrative of urgency, danger, professional duty, and potentially preventable damage. Narrative economics explains that stories can shape expectations and motivate economic action by influencing how individuals interpret events and possible consequences (Shiller, 2019). In the present experiment, the narrative of extinguishing a fire may have activated an automatic preference for intervention, even when the stated payoff structure favored inaction. In real oil and gas organizations, comparable narratives may emerge around production continuity, national interests, occupational safety, environmental protection, and organizational reputation. These narratives can prompt managers to act rapidly, but they may also cause them to underestimate procedural, contractual, or strategic consequences. The results therefore demonstrate that the design of organizational decisions should consider not only the quantitative information provided to managers but also the language, imagery, and contextual narrative through which that information is presented.

The second important finding concerned the effect of authority delegation and incentive alignment. In the second scenario, the manager possessed both the authority and the responsibility to make the decision, and personal outcomes were linked transparently to organizational gains and losses. Under these conditions, the great majority of participants selected the dominant strategy of bypassing formal procedures. This result indicates that decision quality improves when managers clearly understand the scope of their authority and when their incentives are aligned with organizational objectives. Strategic management research has emphasized that decision-making style, strategic processes, and organizational performance are interconnected (Hamidian & Dastanpour Hosseinabadi, 2024). Similarly, financial decision-making can affect productivity and organizational performance when resource-allocation responsibilities are clearly structured (Yousefi & Hashemi, 2023). The present findings extend these arguments by showing experimentally that ambiguity in authority can interfere with the selection of an otherwise rational strategy, whereas explicit delegation and aligned

incentives reduce this ambiguity and facilitate more coherent decision-making.

The improvement observed in the second scenario can also be explained through organizational participation and commitment. When individuals perceive that they have legitimate authority to influence outcomes, they may be more willing to accept responsibility for their decisions and act in accordance with organizational objectives. Participation in decision-making has been associated with stronger organizational commitment because it increases employees' sense of influence, involvement, and procedural legitimacy (Ichdan, 2023). Participative decision-making has similarly been linked to organizational commitment and workplace outcomes in educational organizations (Nassir & Benoliel, 2025). Although the second experimental scenario did not involve participative management in the conventional sense, the explicit delegation of authority created a comparable psychological condition: the manager was recognized as an authorized decision-maker rather than an employee acting under uncertain permission. This recognition appears to have reduced hesitation and enabled participants to focus more directly on the organizational consequences of their choices.

The results further showed that a small minority of participants continued to select the dominated strategy even when authority and incentives were clarified. This finding suggests that structural improvement alone cannot eliminate all deviations from optimal decision-making. Some individuals may possess stable dispositions toward extreme risk aversion, formal procedural compliance, avoidance of personal responsibility, or resistance to acting under uncertainty. Cognitive and psychological differences among managers are therefore likely to influence how decision structures operate in practice. Research has shown that emotional, organizational, and spiritual intelligence can affect professional judgment and decision-making (Ahmadi & Pourzamani, 2024). Leaders operating in volatile, uncertain, complex, and ambiguous environments also require cognitive skills that enable them to process incomplete information, tolerate uncertainty, reconsider assumptions, and make timely decisions (Hafeznia & Ansari, 2025). The minority pattern observed in the present study supports the need to consider individual decision-making capabilities and risk preferences when selecting managers for operational and crisis-sensitive positions.

The persistence of inaction among a minority of participants can also be interpreted through the behavioral concepts of loss aversion and anticipated punishment.

Managers may place greater psychological weight on the possibility of being reprimanded for an unauthorized action than on the less immediate possibility of organizational damage caused by delay. In other words, the personal and visible loss associated with superior disapproval may function as a stronger reference point than the diffuse organizational loss resulting from inaction. Experimental research on punishment indicates that beliefs about sanctions affect cooperative behavior even when the sanctions themselves are uncertain (Yamamoto & Suzuki, 2018). Furthermore, punishment under prospect-theoretical conditions may alter strategic behavior because individuals assess possible gains and losses relative to subjective reference points rather than absolute outcomes (Uchida et al., 2019). In the first scenario, participants may therefore have viewed formal reprimand as a more salient personal loss, while others may have interpreted failure to extinguish the fire as the more unacceptable loss. The variation in responses illustrates why organizational sanctions must be carefully designed and communicated.

The timing of feedback and punishment is also relevant to the interpretation of the findings. In many organizations, the consequences of action and inaction do not occur simultaneously. Operational losses may arise immediately, whereas formal evaluations and disciplinary responses may occur weeks or months later. Conversely, managers may anticipate immediate criticism from superiors but perceive long-term organizational losses as uncertain or collectively shared. Research has shown that delayed punishment and delayed feedback can alter cooperation and efficiency (Waichman & Stenzel, 2019). Accordingly, decision mechanisms in the oil and gas industry should ensure that both the consequences of action and the consequences of inaction are visible to decision-makers. If managers are held accountable only for actions that violate procedures but not for harmful delays, the organizational system may unintentionally reward passivity.

The study also demonstrated the importance of organizational communication and interpretation. The decisions presented in the experiment were influenced by how participants understood the wording of the scenarios and inferred unstated probabilities. Because no explicit information was initially provided regarding the likely reaction of the board of directors, many participants may have assumed an equal probability of approval and disapproval. This assumption was not derived from objective evidence but from an interpretive response to ambiguity. Communication within organizations can

similarly involve incomplete, strategically framed, or even misleading information. Experimental evidence indicates that deceptive communication can arise when senders have incentives to influence receivers, although individuals vary in their willingness to engage in such behavior (Vranceanu & Dubart, 2019). Organizational climate also affects the quality of communication, conflict handling, and decision-making (Augustine & Bora, 2024). These findings support the proposed behavioral control of carefully interpreting organizational narratives, instructions, correspondence, and verbal communications before making strategic decisions.

The role of organizational culture should also be considered. In highly hierarchical organizations, managers may internalize the belief that procedural obedience is more important than timely operational action. In contrast, organizations that excessively reward individual initiative may encourage managers to bypass essential controls. The present study suggests that neither extreme is desirable. Effective organizational culture should create a balance between accountability and discretion, enabling managers to act decisively within clearly defined boundaries. Research has demonstrated that organizational culture influences collaborative decision-making and adaptive responses to changing markets (Chen et al., 2023). It can also foster or inhibit digital innovation and organizational learning (Hedayatvand et al., 2023). Thus, the proposed structural controls should be supported by a culture that distinguishes responsible initiative from arbitrary rule violation.

The findings additionally highlight the relevance of conflict of interest in organizational decision-making. In the first scenario, personal and organizational interests were combined, whereas in the second scenario they were separated but explicitly aligned. The clearer arrangement produced more consistent decisions. This indicates that managers may experience difficulty when personal accountability, organizational benefit, and superior expectations are blended in an ambiguous manner. Organizational conflicts are not limited to overt disagreements; they can arise from competing identities, values, responsibilities, and interpretations of legitimate action (Michalowski & Schmidt, 2025). The proposed behavioral control of identifying and resolving personal and organizational conflicts of interest is therefore directly supported by the experimental findings. Decision mechanisms should make clear who bears the costs, who receives the benefits, and how managerial performance will be evaluated.

The results are also compatible with evidence from public-goods and cooperation games. Individuals' choices in strategic settings are affected not only by material payoffs but also by beliefs regarding the actions and expectations of others (Ackermann & Murphy, 2019). In the present study, participants' beliefs about the board of directors were central to their decisions, even though the board's preferences were not disclosed. Participants effectively constructed an anticipated response and then made decisions on that basis. This resembles organizational reality, where managers often act according to beliefs about what superiors, colleagues, or contractors will approve rather than according to formally stated policies. The findings therefore confirm the value of behavioral game theory as a framework for examining organizational decisions involving strategic interdependence, incomplete information, and subjective beliefs.

The proposed structural controls—appropriate selection of decision-makers, mechanisms at micro and macro levels, and suitable presentation of information—are also supported by developments in data-driven and technology-assisted decision-making. Data analytics can strengthen organizational functions by making patterns and consequences more visible to decision-makers (Varma & Dutta, 2023). Artificial intelligence can improve strategic decision support when it is embedded within transparent reporting and organizational communication systems (Tajabadi & Moazami, 2024). Blockchain-based collective decision systems may also increase transparency and trust in interorganizational collaboration (Bettini de Miranda et al., 2024). However, the present findings indicate that technology must complement rather than replace behavioral and institutional design. Even accurate information may be misinterpreted if authority is unclear, incentives are misaligned, or organizational narratives encourage automatic responses.

Overall, the findings support an integrated model in which structural and behavioral controls operate jointly. Structural controls establish the formal architecture of decision-making by defining authority, responsibility, incentives, information flows, and selection criteria. Behavioral controls address the actual manner in which managers interpret information, respond to narratives, anticipate sanctions, perceive conflicts of interest, and remain cognitively alert during decision-making. This integrated approach is consistent with the broader behavioral regulation literature, which seeks to design institutions that reflect actual rather than idealized human behavior (Tor,

2022). At the same time, behavioral interventions should avoid excessive paternalism and preserve legitimate managerial discretion (Rizzo, 2021). For Iran's oil and gas industry, the most effective model is therefore not one that eliminates individual judgment, but one that channels judgment through clear authority, aligned incentives, transparent information, and continuous behavioral awareness.

The present study had several limitations. First, the experimental participants were university students from different academic disciplines rather than active senior managers in the oil and gas industry. Although some participants had limited familiarity with the industry and game theory, their experience, accountability, and exposure to organizational pressure differed from those of actual decision-makers. Second, the experimental scenarios simplified complex organizational realities into a limited number of choices and payoff structures. Real strategic decisions often involve multiple stakeholders, changing probabilities, technical uncertainty, legal constraints, political considerations, and repeated interactions. Third, participants' assumptions regarding the probabilities of success, board approval, and organizational consequences could not be completely controlled. Finally, the findings were based on hypothetical incentives and simulated crisis situations, and participants' behavior may differ from their conduct when real organizational assets, careers, and public safety are at risk.

Future studies should replicate the experiment with managers, board members, contractors, and technical experts employed in Iran's oil and gas industry. Comparative research could examine whether decision patterns differ according to managerial level, professional background, organizational ownership, work experience, and exposure to operational crises. Future experiments should also manipulate the probability of success, the severity and timing of sanctions, the degree of delegated authority, and the clarity of organizational incentives. Longitudinal and field-based studies could evaluate how actual decisions are made during projects, emergencies, procurement processes, and strategic contractual negotiations. In addition, future research could test the proposed structural and behavioral controls as an integrated model and examine their effects on decision speed, decision quality, accountability, organizational trust, and project performance.

Oil and gas organizations should define emergency decision authority in advance and communicate it clearly to all managerial levels. Incentive and evaluation systems

should account for the costs of both inappropriate action and harmful inaction. Managers assigned to operational and crisis-sensitive positions should be selected not only on the basis of technical expertise but also according to cognitive flexibility, risk judgment, ethical responsibility, and the capacity to act under ambiguity. Organizations should use scenario-based training, behavioral simulations, and post-decision reviews to help managers recognize framing effects, excessive risk aversion, conflicts of interest, and misleading narratives. Decision information should be presented in a transparent and standardized format, while communication channels should allow managers to obtain rapid advice without creating unnecessary procedural delay. Finally, organizations should cultivate a culture in which responsible initiative is supported, avoidable passivity is not rewarded, and accountability is linked to the overall quality and consequences of decisions.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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Ethics Considerations

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