Int. J. Nonlinear Anal. Appl. In Press, 1–25
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2023.31824.4721

Prioritization of the auditor's professional judgment indicators according to the auditor's negotiation strategy by applying the fuzzy Delphi technique

Yadollah Moosapour, Hojjatallah Salari*, Ali Amiri

Department of Accounting, Bandar Abbas Branch, Islamic Azad University, Bandar Abbas, Iran

(Communicated by Javad Vahidi)

Abstract

The main purpose of this research is to prioritize the auditor's professional judgment indicators according to the auditor's negotiation strategies. In this research, qualitative and quantitative data were collected and examined using library and field research methods. In the first phase, using the opinions of experts, the auditor's negotiation strategies have been extracted according to the type of overall competitive and interactive strategy. Then, the fuzzy Delphi technique was used to identify different patterns of negotiation strategies and their significant criteria. Subsequently, fuzzy network analysis was employed to prioritize these strategies, and finally, the VIKOR technique was used to prioritize the professional judgment indicators of auditors. The results obtained from this research indicate that indicators such as non-compliance with unprofessional instructions, prioritizing ethical principles over material interests, and rejecting malicious decisions are of significant importance in the professional judgment of auditors in the context of negotiation strategies.

Keywords: audit, auditor's professional judgment indicators, auditor's negotiation strategy, prioritization of indicators, fuzzy Delphi technique
2020 MSC: 03B52, 91G30, 91-XX

1 Introduction

In today's world, where complexity and rapid economic changes are increasing, the role of professional auditing has become very important to ensure the transparency and honesty of financial information of organizations [19]. Professional auditing, which is one of the important fields of accounting, goes beyond assuring stakeholders and owners of organizations, but this complex and multidimensional process serves as a fundamental tool in risk management and internal control of organizations, and through accurate and impartial evaluation of financial information, helps to make economic decisions [38]. One of the important aspects of professional auditing is the auditor's professional judgment. This concept refers to the auditor's ability and skill in evaluating, analyzing, and interpreting financial and non-financial information. Professional judgment, as one of the key components that affects the quality and credibility of audit reports, plays an important role in audit processes [40]. This judgment is formed based on knowledge, experience,

*Corresponding author
Email addresses: y.mosapor@gmail.com (Yadollah Moosapour), hojjatslr@gmail.com (Hojjatallah Salari), a.amiri@iauba.ac.ir (Ali Amiri)

Received: August 2023 *Accepted:* October 2023

critical thinking, and professional ethical principles. To improve and evaluate the performance of auditors, specific indicators for the professional judgment of auditors are defined. These indicators are elements that assist in assessing the auditor's judgment in the auditing process [39]. Professional judgment indicators allow auditors to use existing laws, standards, and procedures while also leveraging their own critical thinking abilities to arrive at appropriate, effective, and context-specific decisions. This concept is particularly important because audits are often faced with complex and multifaceted issues that require strategic, analytical, and flexible thinking. In particular, professional judgment indicators can help the auditor to look at the problem from different perspectives and approaches and provide innovative and effective solutions [36]. Finally, the auditor's professional judgment indicators can be used as an important tool in improving auditing standards and promoting professional ethics, and help to promote financial transparency and fairness in today's complex and fast-changing world. One of the factors that significantly influences the professional judgment of auditors is the negotiation strategy adopted by the auditor in their interactions with companies and individuals. This strategy assists the auditor in engaging with the management and stakeholders of the organization, facilitating the exchange of information and perspectives, ultimately leading to more precise and effective decision-making [12]. Negotiation strategy can encompass various techniques and methods that aid in addressing complex issues, conflicts, and potential challenges. On the other hand, an inappropriate negotiation strategy can lead to incorrect understanding, conflicts, and even a reduction in the credibility and effectiveness of audit reports [35]. Finally, identifying the indicators of professional judgment according to the negotiation strategy adopted by the auditor can lead to the creation of an efficient, transparent, and valid audit process. However, there are still challenges and issues in understanding the relationship between professional judgment indicators of auditors and their negotiation strategy. These issues encompass various matters such as the complexity of the relationship between these two factors, the absence of clear and reliable standards, the influence of organizational and societal culture, the need for further and more comprehensive research, issues related to conflicts of interest, and continuous changes in the business environment [13]. These issues not only indicate the existing challenges but also emphasize the importance of a serious and comprehensive examination of this subject. Therefore, prioritizing the professional judgment indicators of auditors in the context of negotiation strategy is a complex and crucial matter that requires research and investigation. This issue can be an important step in improving the audit process and increasing confidence in the audit results and help to improve our understanding of how negotiation strategies affect the auditor's professional judgment. Despite the importance of this issue, many existing studies have focused on separate aspects of this subject. However, a comprehensive and integrated analysis of these two factors and their relationship has not yet been conducted [5]. The purpose of this article is a comprehensive and scientific review of how the negotiation strategy affects the auditor's professional judgment indicators and the prioritization of these indicators according to the auditor's negotiation strategy. This goal is defined in such a way that a comprehensive and practical understanding of this issue can be achieved. Understanding this relationship can contribute to the development of new methods and standards aimed at improving the quality and credibility of audit reports. Finally, this research can be an important step towards promoting financial transparency and fairness and help organizations and auditors to face the challenges in this field effectively.

2 Theoretical framework

In this section, we review existing theories in the fields related to auditing, auditor's negotiation strategy, and professional judgment. This review aims to better understand and integrate these concepts into a common framework.

2.1 Audit theories

In this section, we provide a brief overview of the key theories of auditing. These theories describe how auditing is done and its role in financial literature.

- Risk-based auditing theory: This theory emphasizes that the auditor should focus on the items that have the greatest risk of fraud or error. This helps the auditor to allocate his resources efficiently [21].
- Audit independence theory: This theory emphasizes the importance of the auditor's independence from the audited organization. Independence from external factors allows the auditor to make impartial and fair decisions [27].
- Social responsibility theory: This theory emphasizes the importance of the auditor's role in society, not just as a financial expert, but as an institution that has social responsibility [15].

- Stakeholder Relationship Theory: This theory emphasizes the importance of the auditor's communication with various stakeholders, including shareholders, management, and the government. Effective communication can contribute to increased transparency and trust in the results of the audit [16].
- Professional judgment theory: This theory emphasizes the importance of the auditor's ability to evaluate information, analyze complex issues, and make appropriate decisions. Professional judgment requires comprehensive knowledge, experience, and intelligence [31].

The above theories help the researcher to understand the theoretical and philosophical framework of the subject. These theories form the basis of analysis and research findings and help the auditor to effectively deal with complex issues and professional challenges.

2.2 Auditor negotiation theories

Various negotiation theories can be utilized. Below, some of these theories are mentioned, along with their advantages and disadvantages.

1. Game Theory: This theory views negotiation as a strategic game where each party tries to maximize their own interests.
   While game theory provides a conceptual framework for understanding negotiation as a strategic interaction, it is not reducible to a mathematical formula. Instead, game theory includes different models, concepts, and mathematical equations depending on the specific negotiation scenario and assumptions. Here is a simple representation of a negotiation situation using some basic mathematical notation:
   Let's consider a two-player negotiation in which player A and player B try to maximize their interests by choosing from a set of strategies. Each player has a payoff function that represents their preferences over possible outcomes:

$$\text{Player A' s Payoff Function} : U_{A(a,b)} \tag{2.1}$$

   - 'a' represents the strategy chosen by Player A.
   - 'b' represents the strategy chosen by Player B.

$$\text{Player B' s Payoff Function} : U_{B(a,b)} \tag{2.2}$$

   - 'a' represents the strategy chosen by Player A.
   - 'b' represents the strategy chosen by Player B.

   The goal for each player is to choose their strategy to maximize their respective payoffs. In this context, the concept of Nash equilibrium comes into play. A Nash equilibrium is a pair of strategies (a^*, b^*) where neither player has an incentive to unilaterally change their strategy:
   Nash Equilibrium: (a^*, b^*) such that

$$U_{(A(a^*,b^*))} \geq U_{A(a,b^*)} \text{for all possible } 'a' \tag{2.3}$$

$$U_{(B(a^*,b^*))} \geq U_{B(a,b^*)} \text{for all possible } 'b' \tag{2.4}$$

   Finding specific formulas for U_A and U_B depends on the details of the negotiation, the preferences of the players, and the strategies available to them. These functions can be as simple or complex as needed to accurately represent the negotiation scenario.
   It's important to note that real-world negotiation situations can be highly complex, and applying game theory often involves making simplifying assumptions and modeling choices. The specific mathematical representation will vary depending on the context and the specific factors being considered in the negotiation.

   - Advantages: detailed and mathematical analysis of strategies and interactions; the ability to predict behaviors.
   - Disadvantages: Sometimes is cruel; The need for accurate information [22].

2. Distributive and perceptual negotiation theory: A focus on the difference between competitive negotiation
   - Benefits: flexibility and the ability to choose the best approach; Encourage cooperation.
   - Drawbacks: It may lead to conflicts; the need for consensus on the approach is required [29].

3. Intercultural communication theory: This theory examines the influence of cultural patterns on negotiation
   - Advantages: Better understanding of cultural differences; More effective communication.
   - Disadvantages: Complexity and cultural differences may lead to errors [18].
4. Asymmetric Information Theory: This theory examines the effect of not having equal access to information in the negotiation process.
   - Advantages: Attention to the importance of transparency and information.
   - Disadvantages: It may lead to unfairness and conflict [26].
5. Trust and relationship theory: emphasizing the importance of trust and long-term relationships.
   - Benefits: strengthening collaboration and sustainability; Reduce conflict.
   - Drawbacks: time-consuming; It may lead to abuse [1].
6. Multi-criteria decision-making theory: This theory examines decision-making considering multiple criteria and benefits. Multi-criteria decision making (MCDM) is a field that deals with choosing between alternatives based on multiple criteria or objectives. There are various MCDM methods, and the formula used depends on the specific method being applied. One of the most widely used MCDM methods is the Analytic Hierarchy Process (AHP), which involves pairwise comparisons and the use of eigenvectors to calculate priorities. Here's a simplified representation of the AHP formula for a decision problem with 'n' alternatives and 'm' criteria:
   (a) Pairwise Comparison Matrix: Create a pairwise comparison matrix (W) where each element $W(i, j)$ represents the preference or importance of criterion i over criterion j. This matrix is typically filled out based on the judgments of decision-makers.
   (b) Normalize the Matrix: Normalize the matrix so that each column sums to 1. This ensures that the comparisons are consistent and can be represented as probabilities.
   (c) Calculate Weights (Priority Vector): Calculate the priority vector (P), which represents the relative weights of the criteria. This is done by averaging the rows of the normalized matrix:

$$P(i) = \frac{\sum(W(i,j))}{n}, \qquad \text{for all} \quad i = 1, 2, ..., m \tag{2.5}$$

   (d) Calculate the Global Priority Vector: Calculate the global priority vector (G), which represents the overall importance of each alternative. This is done by multiplying the priority vector of criteria (P) by the criteria values for each alternative:

$$G(j) = \sum(P(i) \times X(i,j)), \qquad \text{for all} \quad j = 1, 2, ..., n \tag{2.6}$$

   (e) Rank Alternatives: Rank the alternatives based on their corresponding values in the global priority vector (G). Higher values indicate a better overall performance with respect to the criteria.

It's important to note that this is a simplified representation of the AHP formula, and the actual implementation can involve more mathematical details, including eigenvector calculations and consistency checks.

- Advantages: balanced and comprehensive decision-making; Considering multiple interests.
- Disadvantages: complexity and time-consuming; It may lead to a conflict of interest.

Each of these theories offers its own perspective and approach to negotiation and can be used in different situations and contexts. Choosing the best theory or a combination of them depends on the subject, purpose, and specific circumstances of the negotiation [14].

2.3 Professional judgment models

Professional judgment is a key element in audit quality and accuracy. Here we examine different models that describe how professional decision making and judgment are made. This includes psychological models, decision-making models, and ethical models.

- Ethical decision-making model: This model emphasizes ethical principles and values and examines how to apply these principles in professional judgment [33].

- Hierarchical analytical model: This model focuses on evaluating and weighting different judgment indicators based on their importance [34].
- Bayesian models: These models use statistical principles to analyze information and evaluate different possibilities [9].
- Behavioral models: These models focus on the influence of behavioral factors such as experience, knowledge, and beliefs on professional judgment.
- Mixture Models: These models may be a combination of different approaches and may deal with multidimensional professional judgment analysis [48].

2.4 Negotiation strategy models

Negotiation strategy models refer to a set of frameworks, theories, and methods used to plan and execute negotiations in various contexts, including auditing. These models can include the following:

1. Win-Win Model: This model focuses on cooperation and finding solutions that satisfy both parties. This leads to the creation of long-term relationships and trust.
2. Competitive model: This model focuses on competition and gaining an advantage over the other party. It may be useful in cases where the interests of the parties are conflicting [30].
3. Cooperative model: This model focuses on cooperation and teamwork, and can help solve complex and multi-faceted problems.
4. Interest-Based Negotiation Model: This model focuses on understanding and securing the hidden interests of both parties, not just their apparent positions [10].
5. Cultural negotiation model: This model emphasizes understanding and respecting cultural differences and their relationship with negotiation behaviors [11].
6. Mixture models: these models may be a combination of the above approaches and be chosen according to the conditions and goals of negotiation [24].

In the field of auditing, these models can help the auditor to choose appropriate negotiation strategies for different cases, including negotiations with customers, suppliers, or other stakeholders. In this article, we have compared two models of competitive and cooperative negotiation strategies.

2.5 Research purposes

The present research is conducted with the general purpose of examining and prioritizing the indicators of the auditor's professional judgment according to the negotiation strategy. This general goal is examined in the framework of the following specific objectives:

1. Investigating the relationship between negotiation strategies and professional judgment indicators: Determining and analyzing the existing relationships between different negotiation strategies and the auditor's professional judgment indicators.
2. Prioritization of professional judgment indicators: Determining the priorities and relative importance of different professional judgment indicators according to their role in the audit process.
3. Analysis of negotiation strategies: Review and analysis of negotiation strategies that can influence the auditor's professional judgment, and identify factors influencing the selection and implementation of these strategies.
4. Presenting a conceptual framework: Building a conceptual framework that shows how negotiation strategies influence the auditor's professional judgment indicators.
5. Practical and theoretical application: Providing practical solutions and recommendations for auditors, managers, and researchers in the field of using negotiation strategies to improve professional judgment.

These objectives, along with appropriate methodology, provide a solid basis for conducting research and data analysis and help the research to reach valid and reliable results.

2.6 Research questions

1. What are the negotiation strategies between the client and the auditor?
2. What are the components of the auditor's professional judgment?
3. How to prioritize audit negotiation strategies?
4. What is the prioritization of the auditor's professional judgment components according to the negotiation strategies between the client and the auditor?

2.7 Research hypotheses

1. Hypothesis 1: The auditor's negotiation strategies have a direct effect on the auditor's professional judgment indicators.
2. Hypothesis 2: auditor's professional judgment indicators that are related to negotiation strategies have a greater effect on the quality of audit reports.
3. Hypothesis 3: negotiation strategies based on gaining trust and maintaining relationships have the greatest effect on the auditor's professional judgment indicators.
4. Hypothesis 4: Negotiation strategies that focus on self-interest may weaken indicators of professional judgment.
5. Hypothesis 5: culture and cultural patterns in negotiation strategies have a significant effect on the auditor's professional judgment indicators.

2.8 Research background

Deliu in 2021 investigated the psychological and professional factors that affect the auditor's professional judgment and showed that these factors can influence these skills [17]. In another study, Setyowati et al. in 2021 examined the impact of professional expertise and ethics on audit quality, considering the complexity of the task. The results showed that the complexity of the task plays a managerial role in the influence of these factors on audit quality, and with an increase in complexity, the impact of these factors increases [46]. In 2021, Puthukulam et al. examined the views of auditors in Oman regarding the impact of artificial intelligence on professional skepticism and audit judgment. This research showed that artificial intelligence can have a positive effect, but there is a need for proper training and a deep understanding of this technology [43]. In 2022, Bagus Amalysa et al. investigated the role of emotional intelligence in moderating the relationship between self-confidence and professional judgment regarding the auditor's responsibility in fraud detection. The result showed that emotional intelligence plays an important role in this relationship [6]. In 2023, Al Husban et al. identified the impact of the quality of external auditing on the relationship between professional ethical standards and the quality of financial reporting, demonstrating that high-quality auditing can contribute to the enhancement of financial reporting standards [2]. Soe et al. 2022 investigated the effect of auditor characteristics, including experience and education, on professional judgment in financial auditing using empirical data from Myanmar. The result showed that these characteristics have a significant effect on professional judgment [47]. In 2014, Gitelman et al analyzed the role of professional doubt in moderating the relationship between auditors' knowledge, compliance pressure, and auditors' experience on audit judgment, the result of this research showed that professional doubt plays an important role in this relationship [23]. Wicaksana and Rachman (2018) analyzed the effect of audit experience, audit skill, compliance pressure, and task complexity on auditor judgment. The result showed that these factors are effective factors on the auditor's judgment [51]. Sari et al., in 2022, investigated the effect of the audit automation process on the auditor's judgment in the audit process. The conclusion of this article emphasizes that auditor judgment remains an essential element in the automation process and underscores the importance of preserving and enhancing this skill in the digital age [44]. Beattie et al. investigated the extent, nature, and outcome of negotiations between the two main parties in the auditor-client relationship - financial managers and audit engagement partners. The result of the research shows that negotiations between auditors and financial managers have a significant effect on the audit report [7]. These same authors, in 2004, examined the development of a theoretical model of the negotiation process and the factors influencing the nature of the outcomes of interactions. They concluded by presenting a theoretical model of the negotiation process between auditors and clients, taking into account various factors such as power, time pressure, and communications [8]. The main objective of the research conducted by Hatfield et al. in 2008 was to investigate the effect of client characteristics on auditors' negotiation strategies and how it affects the quality of financial reports. The result of this research showed that client characteristics, including organizational size and structure, influence auditors' negotiation strategies and can affect the quality of financial reports [25]. In 2017, Musah investigated the factors affecting audit costs in Ghana and showed that international recognition, dependence on audit firms and profitability are important factors in determining audit costs in Ghana [37]. In 2013, Utami et al. examined the development of experimental research in auditing and identified potentials for contemporary research.

The result of this study was suggesting future topics such as risk-based auditing, the presentation of audit information, fraud risk assessment, analytical methods, and auditor-client interactions [50]. Lubenchenko in 2022 aimed to provide methodological recommendations for auditing institutions on the establishment of a quality management system. The result of this research was the development of quality risk assessment procedures and control measures in response to the assessed risks [32]. In 2022, Al-Taie et al. studied the effect of external auditor skills on audit quality. The result of this research showed that external auditor skills have a positive effect on audit quality, and time management skills have the greatest effect [4]. Fingland et al. investigated the effect of high uncertainty in accounting estimates on the auditor's litigation risk. The result of this research showed that high uncertainty has a different effect on the auditor's litigation risk, depending on whether the lawsuit is decided in a trial or an out-of-court settlement [20]. Padma Wedari et al. investigated the impact of audit cost, independence, and professionalism on the quality of the audit process. The results of this study showed that audit cost, independence, and professionalism have a positive and significant effect on the quality of the audit process [41]. Jaffar et al. reviewed the value associated with the characteristics of the board of directors and whether this value is improved by disclosing key audit issues. The results of this study showed that some characteristics of the board of directors have a negative effect on investors' reactions. Disclosure of key audit issues acts as an indirect and complementary mediator to increase board value [28]. In 2022, Almasria sought to better understand the relationship between corporate governance mechanisms and external audit quality and concluded that these mechanisms can increase audit quality [3]. In 2019, Ullah et al. examined the relationship of professional doubt, professional-organizational conflict, and performance evaluation to audit judgment, but concluded that auditor failure behavior could not moderate these effects [49]. In 2017, Pérez et al. investigated the effect of qualification, professionalism and experience on auditor's professional judgment and concluded that these factors have a positive effect [42]. In 2022, Satya et al. examined the impact of social presence on maintaining confidence levels and audit quality during the COVID-19 pandemic. They concluded that auditors can maintain these aspects [45]. Finally, Widiyanti and Nuratama in 2021 analyzed the effect of auditor's gender, professional qualification, and experience on audit judgment and concluded that gender has no effect, but the other two factors have a positive and significant effect [52].

2.9 Research gap

In recent decades, extensive research has been conducted in the field of auditor professional judgment and negotiation strategies. These studies have analyzed various factors that influence auditors' judgments, including professional competence, experience, gender, and independence. Also, some of these researches have investigated negotiation strategies and their impact on the audit process. It is clear that both areas of professional judgment and negotiation strategies have been investigated and researched separately. However, what is less noticed in the scientific literature is the combination and interaction of these two areas. In other words, how negotiation strategies can affect the auditor's professional judgment indicators and criteria and how this interaction can help to improve audit quality and increase public trust, in general, the research gaps in this field can be categorized as follows.

- Focus on Individual Indicators: Many previous studies have focused on individual indicators such as the impact of gender, experience, or education on professional judgment. This approach does not contribute to comprehensive and multidimensional research that takes into account all relevant aspects of auditor professional judgment.
- Lack of integration of negotiation strategy: The negotiation strategy seems to have received less attention in the audit literature. This factor can play an important role in the auditor's decision-making and judgment, but it does not seem to have been comprehensively investigated.
- Lack of multidimensional models: Existing models mainly focus on individual factors and often ignore how these factors combine with each other. This issue can help to develop more complex and multidimensional models that investigate the simultaneous effect of several factors.
- Lack of attention to culture and economic environment: Studies have mostly been conducted on specific samples and in specific economic environments, and have often neglected to examine various cultural and economic influences.
- Lack of focus on the prioritization of indicators: most studies have examined the influence of indicators on professional judgment, but there does not seem to be any research that has focused on the prioritization of these indicators based on the auditor's negotiation strategy.

3 Methodology

In this research, library-field methods were used to collect data, the data were analyzed qualitatively and quantitatively. The scope of the research includes the auditor's judgment and negotiation strategy between the auditor and the client. In this field, Iranian auditing companies are studied. However, the time domain of the research is limited to the first half of 1401, and the collection of questionnaires is done in this time frame.

3.1 Population and statistical sample

The statistical population of this study includes academic experts and market participants in the auditing field. For the purpose of sampling, a judgment questionnaire is used, and people who have at least ten years of experience and a doctorate degree are selected as samples.

3.2 Data collection methods and tools

In the field approach, by using structured interviews, the investigated strategies are extracted from different sources in the studied territory. Then, according to the opinion of the experts, the significance of the identified elements is determined.

3.3 Data analyzing method

In this study, fuzzy Delphi technique is used to identify various patterns of negotiation strategies between the auditor and the client, as well as improvement solutions for auditor judgment, and meaningful indicators for them are identified.

3.4 Auditor's professional judgment indicators

By studying articles and scientific sources, the most important indicators of auditors' professional judgment were selected. This research aims to prioritize these indicators using auditor negotiation strategies.

Table 1: Indicators of auditor's professional judgment

Indicators symbol	**The title of the indicators**
A1	The same view to different organizations or people
A2	Preference of ethics over material things
A3	Seeking advice from experts in auditing in case of lack of knowledge or doubt
A4	Not paying attention to the unprofessional and unethical orders of those around you
A5	Abandoning biased and strict decisions when making decisions
A6	Avoiding immediate and uninformed decisions in the presence of uncertainty
A7	Operating within the framework of relevant laws and standards
A8	Attempt to detect fraud during audit

3.5 Study steps

In this study, three different methods have been used to identify and prioritize negotiation patterns and strategies between the auditor and the client:

- Fuzzy Delphi technique: Fuzzy Delphi technique uses expert opinions to identify meaningful and relevant indicators, and uses fuzzy concepts to model uncertainty in data. Using this method, we extract the main criteria of the auditor's negotiation strategy.
- Fuzzy network analysis: Fuzzy network analysis uses fuzzy concepts to model the uncertainty and complexity in the connections between elements, and helps determine the relative importance of each element to others. This method is used in the next step to prioritize the extracted criteria of the auditor's negotiation strategy.

  A simple representation of the fuzzy Delphi technique and its analysis, which may include more complex fuzzy logic tools and methods for evaluation management, can be defined as follows:

  Let's assume we have 'n' experts and 'm' criteria. For simplicity, we'll use triangular fuzzy numbers:

1. Fuzzy Aggregation:
   For each criterion 'j', calculate the fuzzy weighted average as follows:

$$FWA_j = \frac{\sum(w_i * fuzzy_{number_{i_j}})}{\sum w_i} \tag{3.1}$$

   where:
   $'w_i'$ is the weight assigned to expert 'i'.
   $fuzzy_{number_{i_j}}$ is the fuzzy number given by expert 'i' for criterion 'j'.
2. Defuzzification:
   To convert the aggregated fuzzy values into crisp values for each criterion, you can use centroid defuzzification:

$$Crisp_{value_j} = \frac{\int(x * FWA_{j(x)dx})}{\int(FWA_{j(x)dx})} \tag{3.2}$$

   where:
   $'x'$ represents the possible values within the fuzzy number.
   $FWA_{j(x)}$ represents the membership function for the aggregated fuzzy value of criterion 'j'.
   This formula calculates the weighted average of the fuzzy numbers assigned by experts for each criterion, taking into account their assigned weights. The defuzzification step finds the crisp value that represents the consensus among experts for each criterion.

- Vicor's technique: Vicor's technique is a multi-criteria method used to solve decision problems with multiple and conflicting criteria, and helps to find the solution that provides the best balance between the criteria. In this step, we prioritize the 8 indicators of the auditor's professional judgment extracted from the sources, using the extracted and prioritized negotiation strategies in two stages of fuzzy Delphi technique and fuzzy network analysis.

  Here is a mathematical representation of the VIKOR method:

  Assuming there are 'n' alternatives and 'm' criteria, the VIKOR method involves several steps. Let's outline the key equations involved:

  1. Normalization of Criteria:
     Normalize the criteria values for each alternative to a common scale between 0 and 1. This normalization can be done using different methods, such as min-max normalization:

$$\text{Normalized Value}(x_{ij}) = \frac{(\text{Value of Alternative i on Criterion j} - \text{Minimum Value of Criterion j})}{(\text{Maximum Value of Criterion j} - \text{Minimum Value of Criterion j})} \tag{3.3}$$

  2. Weighted Normalized Decision Matrix:
     Create a weighted normalized decision matrix (R) that incorporates the criteria weights (w_j):

$$R_{ij} = w_j \times x_{ij} \tag{3.4}$$

     where:
     $'R'_{ij}$ represents the weighted and normalized value of Alternative i on Criterion j.
     $'w'_j$ represents the weight assigned to Criterion j.
  3. Maximum and Minimum Values:
     Calculate the maximum and minimum values for each alternative across all criteria:

$$S_i^+ = \max(R_{ij}),\ for\ j = 1, ..., m \tag{3.5}$$

$$S_i^- = \min(R_{ij}),\ for\ j = 1, ..., m \tag{3.6}$$

  4. Distance from the Ideal Solution (D_i):
     Calculate the "distance from the ideal solution" for each alternative, considering both maximum and minimum values:

$$D_i^+ = \sqrt{\sum(S_i^+ - R_{ij})^2},\ for\ j = 1, ..., m \tag{3.7}$$

$$D_i^- = \sqrt{\sum(S_i^- - R_{ij})^2},\ for\ j = 1, ..., m \tag{3.8}$$

5. Relative Proximity to the Ideal Solution (Q_i):
   In this step, calculate the "relative proximity to the ideal solution" for each alternative:

$$Q_i = \left(\frac{D_i^-}{(D_i^- + D_i^+)} \right) \tag{3.9}$$

   $'Q_i'$ represents the relative proximity of Alternative i to the ideal solution, where a smaller value indicates a better ranking.
6. Ranking:
   Rank the alternatives based on their $'Q_i'$ values. The alternative with the lowest $'Q_i'$ value is considered the most preferred or the compromise solution.
   The VIKOR method aims to find a compromise solution that balances both maximizing benefit (D_i^-) and minimizing cost (D_i^+). The $'Q_i'$ value quantifies the trade-off between these two objectives, allowing you to rank the alternatives based on their overall performance.

4 Findings

4.1 Derivation of negotiation strategy criteria

By studying sources and reviewing existing literature and consulting with academic elites, 26 criteria were extracted in the interactive and competitive negotiation strategy category, which are shown in Table 2.

Table 2: Auditor negotiation strategy criteria

Category	**Indicator symbol**	**Title of factor**
Interactive negotiation strategy	C1	Valuing the opinions of the opposing party
	C2	Considering the other party's financial and social situation
	C3	Providing the opportunity for the parties to negotiate
	C4	Trying to gain the trust of the other party
	C5	Protecting the dignity of the other party
	C6	Striving to maintain relationships in line with long-term gains
	C7	Not trying to dominate the other party
	C8	Trying to reach an agreement on time
	C9	Trying to keep the other party satisfied
	C10	Consider mutual goals
	C11	Defending the interests of the other party while protecting your own interests
	C12	Commitment and loyalty to the established bond
	C13	Considering the other party's cultural patterns in the negotiation process
	C14	Listening to the words of the other party without prejudice and confrontation
Competitive negotiation strategy	C15	Trying to protect personal interests
	C16	Attempting to haggle when paying fees
	C17	Lack of focus on the opponent's objectives
	C18	Trying to reduce the other party's profit
	C19	Ignoring long-term relationships and focusing on short-term relationships
	C20	Lack of efforts to build trust with the opposing party
	C21	Neglecting the level of satisfaction of the opposing party
	C22	Using a personal style during negotiations
	C23	Focusing on adversarial behavior
	C24	Efforts to protect one's social and financial position
	C25	Emphasis on short-term gains
	C26	Neglecting proper service valuation

After extracting the desired indicators, a questionnaire was designed using the fuzzy Delphi approach and presented to the experts. Experts were invited to rate the importance of each criterion on a 5-point Likert scale from "very little" to "very much". This approach enables the use of fuzzy sets to fuzzify the data, which provides greater compatibility with fuzzy human linguistic descriptions. The use of fuzzy numbers instead of the traditional quantification process allows a better reflection of the human thinking style.

Table 3: Likert scale

The degree of impressionable	Fuzzy value	Triangular fuzzy number
Very low	1	(0, 0, 0.25)
Low	2	(0, 0.25, 0.5)
Medium	3 (0.25, 0.5, 0.75)	
High	4	(0.5, 0.75, 1)
Very high	5	(0.75, 1, 1)

To measure the fuzzy score $w_j = (a_j, b_j, c_j)$ for each index j according to expert i, the following method is used.

l: Lower bound, m: Middle bound, and u: Upper bound of a fuzzy number.

$$a_j = \frac{\sum l}{n} \tag{4.1}$$

$$b_j = \frac{\sum m}{n} \tag{4.2}$$

$$c_j = \frac{\sum u}{n} \tag{4.3}$$

$$w_j = (a_j, b_j, c_j) \tag{4.4}$$

In the following, in order to identify and prioritize the indicators of professional judgment according to the opinions of experts, we use the fuzzy Delphi technique.

4.2 Fuzzy Delphi technique

In the first stage of the fuzzy Delphi technique, we collect the initial opinions of experts and define the initial criteria of the auditor's negotiation strategy. The second stage deals with revising and correcting these criteria based on experts' feedback, and the third stage deals with the final approval of the criteria and setting priorities based on experts' re-evaluation.

In this technique, the approval of experts is required for each negotiation strategy. To quantify expert opinions, the fuzzy arithmetic mean is used. This process involves calculating the lower, middle, and upper bounds of expert opinions by aggregating their views and dividing by the number of experts for each bound. After choosing the appropriate fuzzy spectrum and performing fuzzy operations, fuzzy results are obtained that need to be converted to definite (ordinary) numbers. This transformation is done by calculating the average of three elements $a_j b_j c_j$ for each criterion. If the obtained average is greater than 0.7, the index is acceptable, otherwise it will be removed from the model.

First stage: In the first stage questionnaire, a list of extracted indicators was presented to the experts and they were invited to give their opinion on a certain response spectrum, including the categories of "very low impact" to "very high impact".

Table 4: The results of the first stage of Delphi

Criterion	Indicator	Symbol	Fuzzy value of criterion J			$S = \frac{a_j+b_j+c_j}{3}$	More than the threshold value of 0.7
			a_j	b_j	c_j		
Interactive negotiation strategy	Valuing the opinions of the opposing party	C1	0.59	0.84	0.96	0.79	1.00
	Considering the other party's financial and social situation	C2	0.39	0.64	0.79	0.61	0.00
	Providing the opportunity for the parties to negotiate	C3	0.46	0.71	0.89	0.68	0.00
	Trying to gain the trust of the other party	C4	0.59	0.84	0.95	0.79	1.00
	Protecting the dignity of the other party	C5	0.58	0.83	0.95	0.78	1.00

	Striving to maintain relationships in line with long-term gains	C6	0.56	0.81	0.96	0.78	1.00
	Not trying to dominate the other party	C7	0.35	0.60	0.78	0.58	0.00
	Trying to reach an agreement on time	C8	0.50	0.75	0.89	0.71	1.00
	Trying to keep the other party satisfied	C9	0.53	0.78	0.93	0.75	1.00
	Consider mutual goals	C10	0.57	0.82	0.95	0.78	1.00
	Defending the interests of the other party while protecting your own interests	C11	0.55	0.80	0.93	0.76	1.00
	Commitment and loyalty to the established bond	C12	0.59	0.84	0.96	0.80	1.00
	Considering the other party's cultural patterns in the negotiation process	C13	0.57	0.82	0.96	0.78	1.00
	Listening to the words of the other party without prejudice and confrontation	C14	0.62	0.87	0.97	0.82	1.00
Competitive negotiation strategy	Trying to protect personal interests	C15	0.44	0.69	0.83	0.65	0.00
	Attempting to haggle when paying fees	C16	0.41	0.66	0.84	0.64	0.00
	Lack of focus on the opponent's objectives	C17	0.37	0.62	0.78	0.59	0.00
	Trying to reduce the other party's profit	C18	0.34	0.59	0.76	0.57	0.00
	Ignoring long-term relationships and focusing on short-term relationships	C19	0.34	0.59	0.75	0.56	0.00
	Lack of efforts to build trust with the opposing party	C20	0.35	0.60	0.74	0.57	0.00
	Neglecting the level of satisfaction of the opposing party	C21	0.41	0.66	0.77	0.61	0.00
	Using a personal style during negotiations	C22	0.47	0.72	0.87	0.69	0.00
	Focusing on adversarial behavior	C23	0.48	0.73	0.90	0.70	1.00
	Efforts to protect one's social and financial position	C24	0.45	0.70	0.85	0.67	0.00
	Emphasis on short-term gains	C25	0.41	0.66	0.81	0.63	0.00
	Neglecting proper service valuation	C26	0.40	0.65	0.79	0.61	0.00

Considering the results obtained in total, 26 negotiation strategies were examined, and out of this number, 14 strategies were not approved by the experts. The second-stage questionnaire was initiated three days after distribution, and all respondents participated in both rounds. In this stage as well, respondents were required to express their opinions on the extent of the impact of each of the mentioned factors.

Second stage: In this stage, the remaining 12 indicators in the first stage were extracted and again delivered to the experts for answers.

Table 5: The second stage of Delphi

Criterion	**Indicator**	**Symbol**	**Fuzzy value of criterion J**			$S = \frac{a_j+b_j+c_j}{3}$	**More than the threshold value of 0.7**
			a_j	b_j	c_j		
	Valuing the opinions of the opposing party	C1	0.55	0.80	0.94	0.76	1.00

	Considering the other party's financial and social situation	C2					
	Providing the opportunity for the parties to negotiate	C3					
	Trying to gain the trust of the other party	C4	0.52	0.77	0.90	0.73	1.00
	Protecting the dignity of the other party	C5	0.58	0.83	0.96	0.79	1.00
	Striving to maintain relationships in line with long-term gains	C6	0.54	0.79	0.92	0.75	1.00
	Not trying to dominate the other party	C7					
	Trying to reach an agreement on time	C8	0.54	0.79	0.94	0.76	1.00
	Trying to keep the other party satisfied	C9	0.51	0.76	0.87	0.71	1.00
	Consider mutual goals	C10	0.49	0.74	0.88	0.70	1.00
Interactive negotiation strategy	Defending the interests of the other party while protecting your own interests	C11	0.57	0.82	0.94	0.78	1.00
	Commitment and loyalty to the established bond	C12	0.59	0.84	0.94	0.79	1.00
	Considering the other party's cultural patterns in the negotiation process	C13	0.52	0.77	0.90	0.73	1.00
	Listening to the words of the other party without prejudice and confrontation	C14	0.56	0.81	0.91	0.76	1.00
	Trying to protect personal interests	C15					
	Attempting to haggle when paying fees	C16					
	Lack of focus on the opponent's objectives	C17					
Competitive negotiation strategy	Trying to reduce the other party's profit	C18					
	Ignoring long-term relationships and focusing on short-term relationships	C19					
	Lack of efforts to build trust with the opposing party	C20					
	Neglecting the level of satisfaction of the opposing party	C21					
	Using a personal style during negotiations	C22					
	Focusing on adversarial behavior	C23	0.25	0.50	0.69	0.48	0.00
	Efforts to protect one's social and financial position	C24					
	Emphasis on short-term gains	C25					
	Neglecting proper service valuation	C26					

According to the above table, in the second round, out of the total of 12 remaining indicators in the first stage, 1 indicator has not been approved by the experts.

The third stage of the fuzzy Delphi technique: the remaining indicators from the second stage were handed over to the experts again to get their opinion.

Table 6: The third phase of fuzzy Delphi

Criterion	Indicator	Symbol	Fuzzy value of criterion J			$S = \frac{a_j+b_j+c_j}{3}$	More than the threshold value of 0.7
			a_j	b_j	c_j		
Interactive negotiation strategy	Valuing the opinions of the opposing party	C1	0.70	0.95	0.99	0.88	1.00
	Considering the other party's financial and social situation	C2					
	Providing the opportunity for the parties to negotiate	C3					
	Trying to gain the trust of the other party	C4	0.71	0.96	0.99	0.89	1.00
	Protecting the dignity of the other party	C5	0.70	0.95	0.99	0.88	1.00
	Striving to maintain relationships in line with long-term gains	C6	0.68	0.93	0.99	0.87	1.00
	Not trying to dominate the other party	C7					
	Trying to reach an agreement on time	C8	0.68	0.93	0.97	0.86	1.00
	Trying to keep the other party satisfied	C9	0.68	0.93	0.97	0.86	1.00
	Consider mutual goals	C10	0.67	0.92	0.97	0.86	1.00
	Defending the interests of the other party while protecting your own interests	C11	0.67	0.92	0.97	0.86	1.00
	Commitment and loyalty to the established bond	C12	0.68	0.93	0.97	0.86	1.00
	Considering the other party's cultural patterns in the negotiation process	C13	0.67	0.92	0.97	0.86	1.00
	Listening to the words of the other party without prejudice and confrontation	C14	0.68	0.93	0.97	0.86	1.00
Competitive negotiation strategy	Trying to protect personal interests	C15					
	Attempting to haggle when paying fees	C16					
	Lack of focus on the opponent's objectives	C17					
	Trying to reduce the other party's profit	C18					
	Ignoring long-term relationships and focusing on short-term relationships	C19					
	Lack of efforts to build trust with the opposing party	C20					
	Neglecting the level of satisfaction of the opposing party	C21					
	Using a personal style during negotiations	C22					
	Focusing on adversarial behavior	C23					
	Efforts to protect one's social and financial position	C24					
	Emphasis on short-term gains	C25					
	Neglecting proper service valuation	C26					

According to the table above, in the third round, all 11 remaining indicators were approved in the second stage.

4.2.1 Confirming the consensus of indicators

To determine whether or not there is a consensus of opinion on the topic under investigation, differences of opinion are evaluated at different stages of the research. This evaluation includes comparing the differences of opinions in the first and second stages, as well as the second and third stages. If the difference of opinions is less than the threshold (0.25), it can be concluded that a consensus of opinion has been reached among experts.

Table 7: Evaluation of the consensus of expert opinion

Symbol	First stage	Second stage	Third stage	The difference between the first and second stages	The difference between the second and third stages	Reach a consensus
C1	0.79	0.76	0.88	0.03	0.12	1.00
C2	0.61					
C3	0.68					
C4	0.79	0.73	0.89	0.06	0.16	1.00
C5	0.78	0.79	0.88	0.01	0.09	1.00
C6	0.78	0.75	0.87	0.03	0.12	1.00
C7	0.58					
C8	0.71	0.76	0.86	0.05	0.10	1.00
C9	0.75	0.71	0.86	0.04	0.15	1.00
C10	0.78	0.70	0.86	0.08	0.16	1.00
C11	0.76	0.78	0.86	0.02	0.08	1.00
C12	0.80	0.79	0.86	0.01	0.07	1.00
C13	0.78	0.73	0.86	0.05	0.13	1.00
C14	0.82	0.76	0.86	0.06	0.10	1.00
C15	0.65					
C16	0.64					
C17	0.59					
C18	0.57					
C19	0.56					
C20	0.57					
C21	0.61					
C22	0.69					
C23	0.70	0.48	0.22			
C24	0.67					
C25	0.63					
C26	0.61					

According to the obtained results, it seems that in the three stages, the consensus of the experts' opinion has been reached and there is no need to collect the opinions again. In the following, the final indicators for entering the next stages of the work are presented.

Table 8: The auditor's final negotiation strategies

Symbol	Negotiation strategies
X1	Valuing the opinions of the opposing party
X2	Trying to gain the trust of the other party
X3	Protecting the dignity of the other party
X4	Striving to maintain relationships in line with long-term gains
X5	Trying to reach an agreement on time
X6	Trying to keep the other party satisfied
X7	Consider mutual goals
X8	Defending the interests of the other party while protecting your own interests
X9	Commitment and loyalty to the established bond
X10	Considering the other party's cultural patterns in the negotiation process
X11	Listening to the words of the other party without prejudice and confrontation

According to the obtained results, it is important to mention that interactive negotiation strategies are much more important than competitive strategies, so that all the remaining strategies are from this group.

4.3 Second step: Fuzzy network analysis

In this step, we prioritize the negotiation strategies extracted in the fuzzy Delphi step.

The main steps of this analysis are as follows:

1. Calculation of relative weights: Using the opinions of experts, the relative weights of criteria are calculated, which indicates the relative importance of each criterion compared to others.
2. Fuzzy matrix creation: Based on the collected opinions, a fuzzy matrix is constructed, which shows the connections and weights of the criteria.
3. Analysis and conclusion: The calculation results are analyzed and final decisions are made based on them.

To weight the final indices obtained from the fuzzy Delphi phase, we use the AHP method. Initially, we create a pairwise comparison matrix using relative importance comparisons, where we compare the importance of each criterion relative to the others. To determine the importance and preference in pairwise comparisons, we use a scale from 1 to 9, known as the Saaty scale, as follows:

Table 9: Preference values for pairwise comparisons

Preferences	**Numerical value**
Equal importance	1
Medium importance (slightly more important)	3
Strong importance	5
Very strong importance	7
Absolute importance	9
Intermediate values between the above intervals	2,4,6,8

After specifying the value of the importance of each criterion compared to other criteria, we add the values of each column in the last row of the table.

Table 10: Pairwise comparison matrix

Criteria	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**
X1	1	0.5	3	2	3	2	3	4	3	2	0.5
X2	2	1	4	3	4	3	4	5	4	3	1
X3	0.33	0.25	1	0.5	1	0.5	1	2	1	0.5	0.25
X4	0.5	0.33	2	1	2	1	2	3	2	1	0.33
X5	0.33	0.25	1	0.5	1	0.5	1	2	1	0.5	0.25
X6	0.5	0.33	2	1	2	1	2	3	2	1	0.33
X7	0.33	0.25	1	0.5	1	0.5	1	2	1	0.5	0.25
X8	0.25	0.2	0.5	0.33	0.5	0.33	0.5	1	0.5	0.33	0.2
X9	0.33	0.25	1	0.5	1	0.5	1	2	1	0.5	0.25
X10	0.5	0.33	2	1	2	1	2	3	2	1	0.33
X11	2	1	4	3	4	3	4	5	4	3	1
Total columns	8.07	4.69	21.5	13.33	21.5	13.33	21.5	32	21.5	13.33	4.69

In the next step, to obtain the normal matrix, the values of each row of the matrix must be divided by the total number of columns of the matrix to obtain the normalized matrix.

Table 11: Normal matrix

Criteria	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**
X1	0.1239	0.1066	0.1395	0.1500	0.1395	0.1500	0.1395	0.1250	0.1395	0.1500	0.1066
X2	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132
X3	0.0409	0.0533	0.465	0.0375	0.465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533

X4	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704
X5	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533
X6	0.0620	0.0704	0.0930	0.0750	0.0930	0750	0.0930	0.0938	0.0930	0.0750	0.0704
X7	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533
X8	0.0310	0.0426	0.0233	0.0248	0.0233	0.0248	0.0233	0.0313	0.0233	0.0248	0.0426
X9	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533
X10	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704
X11	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132

After creating the pairwise comparison matrix, we then sum the values in each row of the matrix and divide by the number of elements in each row to obtain the average of each row. The values obtained determine the weight of each criterion. It's worth mentioning that the criterion weights are derived from averaging the elements within each row.

Table 12: The weights of the criteria for auditor negotiation strategies

Criteria	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**	**Criterion weights**
X1	0.1239	0.1066	0.1395	0.1500	0.1395	0.1500	0.1395	0.1250	0.1395	0.1500	0.1066	0.1337
X2	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132	0.2045
X3	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.0462
X4	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.0812
X5	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.0462
X6	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.0812
X7	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.0462
X8	0.0310	0.0426	0.0233	0.0248	0.0233	0.0248	0.0233	0.0313	0.0233	0.0248	0.0426	0.0286
X9	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.0462
X10	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.0812
X11	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132	0.2045

In the next step, we focus on calculating consistency to determine whether the calculated weight values are valid or not. For this purpose, we select the pairwise comparison matrix (Table 10) and multiply the obtained weights by each element in the matrix, resulting in values as shown in the table below. Then, we sum the values in each row for each criterion, obtaining weighted sum values, which are visible in the weighted sum values column. To obtain the consistency vector, we divide the obtained weighted sum values by the criterion weights.

Table 13: Calculating the compatibility of criteria

Criteria	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**	**Weighted total values**	**Criterion weights**	**Compatibility vector**
X1	0.1239	0.1066	0.1395	0.1500	0.1395	0.1500	0.1395	0.1250	0.1395	0.1500	0.1066	1.4949	0.1337	11.1834
X2	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132	2.2904	0.2045	11.1980
X3	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.5104	0.0462	11.0396
X4	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.9013	0.0812	11.0946
X5	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.5104	0.0462	11.0396
X6	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.9013	0.0812	11.0946
X7	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.5104	0.0462	11.0396
X8	0.0310	0.0426	0.0233	0.0248	0.0233	0.0248	0.0233	0.0313	0.0233	0.0248	0.0426	0.3167	0.0286	11.0675
X9	0.0409	0.0533	0.0465	0.0375	0.0465	0.0375	0.0465	0.0625	0.0465	0.0375	0.0533	0.5104	0.0462	11.0396
X10	0.0620	0.0704	0.0930	0.0750	0.0930	0.0750	0.0930	0.0938	0.0930	0.0750	0.0704	0.9013	0.0812	11.0946
X11	0.2478	0.2132	0.1860	0.2251	0.1860	0.2251	0.1860	0.1563	0.1860	0.2251	0.2132	2.2904	0.2045	11.1980

By averaging all the column values of the compatibility vector, the maximum eigenvalue is obtained, which is equal to

$$\lambda = 11.0989788$$

Table 14: Compatibility rate check

Maximum eigenvalue ($\lambda_{\max}$)	**Compatibility index**	**Compatibility rate**
11.0989788	0.009897878	0.00655489

Then we use the following formula to calculate the compatibility index:

n: number of criteria

$$C.I = \frac{\lambda_{\max} - n}{n-1} = \frac{11.0989788 - 11}{11-1} = 0.009897878$$

As can be seen, the compatibility index is equal to: 0.009897878

And finally, to calculate the compatibility rate, we divide the compatibility index by the random index:

R.I: The randomness index is a constant value that is equal to 1.51 for 11 criteria

$$C.R\frac{C.I}{R.I} = \frac{0.009897878}{1.51} = 0.00655489$$

Considering that the consistency ratio (0.00655489) obtained is less than 0.10, it can be assumed that our criteria are logically consistent, and the calculated weight values are valid, as seen in the table below with the weight values for each criterion.

Table 15: Final weighting of criteria

Criteria symbol	**The title of the criteria**	**Criteria weights**
X1	Valuing the opinions of the opposing party	0.1337
X2	Trying to gain the trust of the other party	0.2045
X3	Protecting the dignity of the other party	0.0462
X4	Striving to maintain relationships in line with long-term gains	0.0812
X5	Trying to reach an agreement on time	0.0462
X6	Trying to keep the other party satisfied	0.0812
X7	Consider mutual goals	0.0462
X8	Defending the interests of the other party while protecting your own interests	0.0286
X9	Commitment and loyalty to the established bond	0.0462
X10	Considering the other party's cultural patterns in the negotiation process	0.0812
X11	Listening to the words of the other party without prejudice and confrontation	0.2045

According to the obtained results, trying to gain the other party's trust, listening to the other party's words without prejudice and fronting, and valuing the opinions of the opposing party are the most important strategies used.

In the next step, in order to prioritize the indicators of the auditor's professional judgment according to the remaining 11 negotiation strategies of the auditor resulting from the steps of fuzzy Delphi and fuzzy network analysis, we use VIKOR method.

4.4 Prioritizing indicators using VIKOR method

At this stage, we prioritize the elements of the auditor's professional judgment according to the auditor's and client's negotiation strategies. For this purpose, VIKOR method is used.

As explained in the methodology section, the eight indicators of the auditor's professional judgment extracted from scientific articles and sources are as follows.

Table 16: Auditor's professional judgment indicators

Indicators symbol	**The title of the indicators**
A1	The same view to different organizations or people
A2	Preference for ethics over materialism
A3	Consult with experts in your audit in case of lack of knowledge or doubt
A4	Not paying attention to the unprofessional and unethical orders of those around you
A5	Abandoning biased and rigid decisions when making decisions
A6	Avoiding immediate and uninformed decisions in the presence of uncertainty
A7	Adhering to the framework of relevant laws and standards
A8	Attempt to detect fraud during audit

We convert qualitative values into quantitative using a 5-point scale, and since we have also determined the criterion weights using the AHP method, we now proceed to prioritize the elements of auditor professional judgment based on the negotiation strategies of auditors and clients using the VIKOR method.

In the first step, the average opinions of the experts are entered, and the obtained weights for each criterion are also entered into the table. Afterward, useful and non-useful criteria are identified; useful criteria are those with higher values, and non-useful criteria are those with lower desirable values. In our problem, all criteria are considered useful criteria. For useful criteria, the maximum value is the best and the minimum value is the worst, while for non-useful criteria, the minimum value is the best and the maximum value is the worst. Therefore, based on the above information, we obtain the maximum value (X_i^+) and minimum value (X_i^-) for each column.

Table 17: VIKOR technique table

Criteria weights	**0.1337**	**0.2045**	**0.0462**	**0.0812**	**0.0462**	**0.0812**	**0.0462**	**0.0286**	**0.0462**	**0.0812**	**0.2045**
Criteria / Indicators	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**
A1	5	2	1	2	2	4	1	2	4	4	3
A2	4	3	5	3	3	4	2	3	4	5	4
A3	4	3	2	1	3	3	3	5	2	3	2
A4	5	5	3	2	4	2	4	3	5	1	5
A5	5	4	3	5	5	4	3	4	2	1	3
A6	2	2	2	3	2	5	1	4	3	1	2
A7	3	2	4	4	2	4	1	2	2	1	1
A8	5	1	2	3	1	1	5	1	2	3	2
Best (X_i^+)	5	5	5	5	5	5	5	5	5	5	5
Worst (X_i^-)	2	1	1	1	1	1	1	1	2	1	1

In the next step, we will calculate S_i or the useful value and R_i or the regrettable value of each criterion, which S_i is obtained from the following formula.

W_j: criteria weight, X_i^+: the best value, X_i^-: the worst value, X_{ij}: the value of cell ij of the table

$$S_i = \sum_{j=1}^{m} \left(W_j \times \frac{X_i^+ - X_{ij}}{X_i^+ - X_i^-} \right) \tag{4.5}$$

We obtain the values for all the cells using the above formula, and in the next step, the sum of each row must be added to obtain S_i. And we use the following formula to calculate R_i or the regret value of each measure:

$$R_i = \max_j \left(W_j \times \frac{X_i^+ - X_{ij}}{X_i^+ - X_i^-} \right) \tag{4.6}$$

According to the above formula, the maximum value of each row is calculated as R_i.

Table 18: Vicor method calculations

Criteria / Indicators	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**	S_i	R_i
A1	0	0.1534	0.0462	0.0609	0.0347	0.0203	0.0462	0.0215	0.0154	0.0203	0.1023	0.5212	0.1534
A2	0.0446	0.1023	0	0.0406	0.0231	0.0203	0.0347	0.0143	0.0154	0	0.0511	0.3464	0.1023
A3	0.0446	0.1023	0.0347	0.0812	0.0231	0.0406	0.0231	0	0.0462	0.0406	0.1534	0.5898	0.1534
A4	0	0	0.0231	0.0609	0.0116	0.0609	0.0116	0.0143	0	0.0812	0	0.2636	0.0812
A5	0	0.0511	0.0231	0	0	0.0203	0.0231	0.0072	0.0462	0.0812	0.1023	0.3546	0.1023
A6	0.1337	0.1534	0.0347	0.0406	0.0347	0	0.0462	0.0072	0.0308	0.0812	0.1534	0.7159	0.1534
A7	0.0891	0.2045	0.0116	0.0203	0.0347	0.0203	0.0462	0.0215	0.0462	0.0812	0.2045	0.7802	0.2045
A8	0	0.2045	0.0347	0.0406	0.0462	0.0812	0	0.0286	0.0462	0.0406	0.1534	0.6762	0.2045
Best (X_i^+)	5	5	5	5	5	5	5	5	5	5	5		
Worst (X_i^-)	2	1	1	1	1	1	1	1	2	1	1		

In the next step, we need to obtain S^*, S^-, R^*, and R^-, which are obtained from the following formulas.

$$S^* : \text{the smallest} \quad S_i; \quad S^- : \text{the largest} \quad S_i; \quad R^* : \text{the smallest} \quad R_i; \quad R^- : \text{the largest} \quad R_i$$

In the next step, we calculate Q_i or Vicor index, which is obtained from the following formula.

Criteria / Options	S_i	R_i
The same view to different organizations or people	0.5212	0.1534
Preference for ethics over materialism	0.3464	0.1023
Consult with experts in your audit in case of lack of knowledge or doubt	0.5898	0.1534
Not paying attention to the unprofessional and unethical orders of those around you	0.2636	0.0812
Abandoning biased and rigid decisions when making decisions	0.3546	0.1023
Avoiding immediate and uninformed decisions in the presence of uncertainty	0.7159	0.1534
Adhering to the framework of relevant laws and standards	0.7802	0.2045
Attempt to detect fraud during audit	0.6762	0.2045
S^*, R^*	0.2636	0.0812
S^-, R^-	0.7802	0.2045

With the agreement of the decision-making group, v is equal to 0.5.

$$Q_i = v \times \frac{S_i - S^*}{S^- - S^*} + (1 - v) \times \frac{R_i - R^*}{R^- - R^*} \tag{4.7}$$

We rank based on the value of Q_i, and the smallest Q_i obtains the first rank. However, two conditions must be met.

The first condition: the value of Q_i of the second rank minus the value of Q_i of the first rank must be greater than DQ. where j is the number of options

$Q(A^2) - Q(A^1) \geq DQ$ provided that $DQ = \frac{1}{j-1}$

$$DQ = \frac{1}{8-1} = 142; \quad 0.44973366 - 0.21142002 = 0.23831364 \geq 0.142$$

And the second condition: the top option or $Q(A^1)$ must be at least in one of the R and S groups as the top rank.

According to the calculations, the first condition is satisfied, and the second condition $Q(A^1)$ is the highest rank in the R group according to the values in the table below, and the second condition is also satisfied.

Table 19: The final ranking of the auditor's professional judgment indicators

Criteria / Options	S_i	R_i	Q_i	Final rank
The same view to different organizations or people	0.5212	0.1534	0.5420	4
Preference for ethics over materialism	0.3464	0.1023	0.1654	2
Consult with experts in your audit in case of lack of knowledge or doubt	0.5898	0.1534	0.6084	5
Not paying attention to the unprofessional and unethical orders of those around you	0.2636	0.0812	0.0000	1
Abandoning biased and rigid decisions when making decisions	0.3546	0.1023	0.1733	3
Avoiding immediate and uninformed decisions in the presence of uncertainty	0.7159	0.1534	0.7304	6
Adhering to the framework of relevant laws and standards	0.7802	0.2045	1.0000	8
Attempt to detect fraud during audit	0.6762	0.2045	0.8993	7
S^*, R^*	0.2636	0.0812		
S^-, R^-	0.7802	0.2045		

5 Discussion and conclusion

Based on the results obtained, among the interactive and competitive negotiation strategies examined at the beginning of section 4, interactive negotiation strategies hold greater importance compared to competitive negotiation strategies. These findings indicate that interactive negotiation strategies play a significant and effective role in enhancing the quality and efficiency of the auditing process and are noticeably superior to competitive strategies. Interactive negotiation strategies are based on cooperation, information sharing, and mutual understanding. This approach helps the exchange of information between the negotiating parties and can lead to common and acceptable solutions. On

the other hand, competing strategies may lead to conflict and inequality, and this can lead to a reduction in the effectiveness of the audit process. The results of this research show that all the remaining strategies in this study were from the group of interactive strategies. This finding can indicate a paradigm shift in audit negotiation approaches, where the emphasis on cooperation and mutual understanding has replaced competitive and combative approaches.

In the continuation of the results section, an attempt was made to prioritize the indicators of the auditor's professional judgment according to the obtained negotiation strategies. According to the obtained results, the indicators of the auditor's professional judgment can be prioritized in the following order.

1. **Failure to pay attention to unprofessional and unethical orders:** This factor shows the auditor's ability to resist external pressure and reject requests that contradict professional and ethical principles. This issue has the highest priority in professional judgment indicators.
2. **Preference of ethics over material things:** this factor shows the attention to moral principles against material interests and shows the auditor's commitment to professional principles.
3. **Abandoning biased and strict decisions:** This item refers to the auditor's ability to avoid biased and irrational decisions, and indicates balance and fairness in the decision-making process.
4. **The same vision towards the organization or different people:** this index refers to the auditor's ability to evaluate and interpret the same and impartially from different people and organizations.
5. **Consulting with Experts in auditing in case of ignorance or doubt:** This indicator highlights the importance of utilizing the knowledge and expertise of experts in specific areas of auditing when lacking knowledge or facing uncertainty.
6. **Avoiding quick and uninformed decisions:** This factor emphasizes the auditor's ability to avoid making hasty decisions without sufficient research, especially in situations where there is insufficient certainty.
7. **Trying to detect fraud during the audit:** This case emphasizes the ability and commitment of the auditor to identify and follow up cases of fraud in the audit.
8. **Adhering to the framework of relevant laws and standards:** This factor emphasizes the importance of compliance with laws, regulations, and professional standards by the auditor.

The factors examined in this research depict a diverse mix of ethical, professional, and legal principles that all influence the auditor's professional judgment. These factors not only show the complexity and multiplicity of different aspects of the audit process, but also help to explain how these aspects interact and influence each other. Ethical principles help the auditor make decisions based on ethical values and standards, while professional and legal principles help ensure compliance with relevant regulations and standards. The combination of these factors can lead to a balanced and responsible decision-making process. Overall, these findings not only lead to a deeper understanding of how the auditor's negotiation strategy affects professional judgment indicators, but can also play an important role in improving the quality and credibility of the audit process. This understanding can contribute to the development of new strategies and approaches in auditing, focusing on defining and strengthening the relationships between ethical, professional, and legal principles and their impact on professional judgment. Additionally, these findings can provide auditors, regulatory authorities, and policy makers with scientific reasons for improving standards and relevant training, thereby aiding in the overall improvement of auditing performance and increasing public trust in this process.

Answering to the questions:

1. **What are the negotiation strategies between the client and the auditor?**
   In the present study, the meta-synthesis approach was used to analyze the elements of the negotiation strategy between the client and the auditor. By reviewing the theoretical literature, 26 primary indicators were identified. Then, using the fuzzy Delphi method, experts' opinions were collected and in three rounds of Delphi, 11 final indicators were selected, which are used to explain the negotiation strategy between the client and the auditor. These indicators are:
   (a) Valuing the opinions of the opposing party
   (b) Trying to gain the trust of the other party
   (c) Protecting the dignity of the other party
   (d) Trying to maintain relationships in line with long-term achievements
   (e) Trying to reach an agreement on time
   (f) Trying to keep the satisfaction of the other party
   (g) Considering mutual goals
   (h) Defending the interests of the other party while protecting one's own interests
   (i) Commitment and loyalty to the established link

(j) Considering the other party's cultural patterns in the negotiation process
(k) Listening to the words of the other party without prejudice and confrontation

2. **What are the components of the auditor's professional judgment?**
In the present study, by reviewing the existing literature and using standard questionnaires in the field of auditor's professional judgment, 8 standard indicators were extracted. These indicators include the following:
   (a) The same vision towards the organization or different people
   (b) Preference for ethics over materialism
   (c) Consult with experts in your audit in case of lack of knowledge or doubt
   (d) Not paying attention to the unprofessional and unethical orders of the people around you
   (e) Putting aside biased and strict decisions when making decisions
   (f) Avoiding immediate and uninformed decisions in the presence of uncertainty
   (g) Adhering to the framework of relevant laws and standards
   (h) Trying to detect fraud during the audit
3. **How to prioritize audit negotiation strategies?**
Using the fuzzy hierarchical analysis technique, in this study, the indicators were ranked in order to prioritize audit negotiation strategies.
The prioritization of indicators is as follows:
   (a) Listening to the words of the other party without prejudice and confrontation (0.2045)
   (b) Trying to gain the trust of the other party (0.2045)
   (c) Valuing the opinions of the opposing party (0.1337)
   (d) Trying to maintain relationships in line with long-term achievements (0.0812)
   (e) Trying to keep the other party satisfied (0.0812)
   (f) Considering the other party's cultural patterns in the negotiation process (0.0812)
   (g) Commitment and loyalty to the created link (0.0462)
   (h) Considering mutual goals (0.0462)
   (i) Protecting the dignity of the other party (0.0462)
   (j) Trying to reach an agreement on time (0.0462)
   (k) Defending the interests of the other party while protecting one's own interests (0.0286)
4. **What is the prioritization of the auditor's professional judgment components according to the negotiation strategies between the client and the auditor?**
Using VICOR method, in this study, in order to answer this question, indicators were used for prioritization. The results of prioritizing the indicators are as follows:
   (a) Not paying attention to the unprofessional and unethical orders of the people around you
   (b) Preference for ethics over materialism
   (c) Putting aside biased and strict decisions when making decisions
   (d) The same vision to different organizations or people
   (e) Consult with experts in your audit in case of lack of knowledge or doubt
   (f) Avoiding immediate and uninformed decisions in the presence of uncertainty
   (g) Trying to detect fraud during the audit
   (h) Adhering to the framework of relevant laws and standards

5.1 Suggestions for future researchers

1. Investigating the effect of different negotiation strategies: More research can be done on how different negotiation strategies affect the auditor's professional judgment indicators. This can include comparing and analyzing successful and unsuccessful strategies.
2. In-depth analysis of professional judgment indicators: More in-depth research on each of the professional judgment indicators identified in this research can help to better understand their impact and importance.
3. Examining different business cultures and environments: The effect of different business cultures and environments on negotiation strategy and professional judgment indicators can be an interesting topic for future research.
4. Training and development of negotiation skills: The development of training programs to improve auditors' negotiation skills and its impact on professional judgment can be investigated.
5. Use of technology: Investigating how to use new technologies, such as artificial intelligence, in facilitating and improving the auditor's professional judgment and negotiation process.

6. Analysis of the impact of legal and regulatory issues: examining the impact of local and international laws, regulations, and standards on negotiation strategy and professional judgment indicators.
7. The link between professional judgment and audit quality: research on the relationship between professional judgment indicators and overall audit quality, and how to improve this quality by enhancing professional judgment.

These suggestions can help to develop and deepen knowledge in the field of auditor's professional judgment and negotiation strategies and provide a platform for future research in this field.

References

[1] S. Aghazadeh, T. Lambert, and Y.J. Wu, *Client negotiation strategy spillover to integrated audit judgments*, Manag. Audit. J. **35** (2020), no. 9, 1261–1278.

[2] R.R.I. Al Husban, G.F. Al-Matarneh, E. Ghaidan, and A.A.A. Alhusban, *The effect of the quality of external auditing on the relationship between the rules of professional conduct and the quality of financial reporting*, Corp. Bus. Strateg. Rev. **3** (2022), no. 1, 153–160.

[3] N.A. Almasria, *Corporate governance and the quality of audit process: An exploratory analysis considering internal audit, audit committee and board of directors*, Eur. J. Bus. Manag. Res. **7** (2022), no. 1, 78–99.

[4] P.M.M. Al-Taie, H. Sameer, and A. Jaber, *Impact of skills of the external auditor on auditing quality*, Muthanna J. Adm. Econ. Sci. **12** (2022), no. 3, 65–86.

[5] C. Ax and J. Greve, *Adoption of management accounting innovations: Organizational culture compatibility and perceived outcomes*, Manag. Account. Res. **34** (2017), 59–74.

[6] A.A. Bagus Amlayasa and N.P. Riasning, *The role of emotional intelligence in moderating the relationship of self-efficacy and professional skepticism towards the auditor's responsibility in detecting fraud*, Int. J. Sci. Manag. Res. **05** (2022), no. 11, 01–04.

[7] V. Beattie, S. Fearnley, and R. Brandt, *Behind the audit report: A descriptive study of discussions and negotiations between auditors and directors*, Int. J. Audit. **4** (2000), no. 2, 177–202.

[8] V. Beattie, S. Fearnley, and R. Brandt, *A grounded theory model of auditor-client negotiations*, Int. J. Audit. **8** (2004), no. 1, 1–19.

[9] A. Ben Amar, *The effect of audit committee financial experts on earnings management*, Int. J. Manag. Financ. Account. **6** (2014), no. 2, 156–166.

[10] H.L. Brown and K.M. Johnstone, *Resolving disputed financial reporting issues: Effects of auditor negotiation experience and engagement risk on negotiation process and outcome*, Audit. **28** (2009), no. 2, 65–92.

[11] H.L. Brown and A.M. Wright, *Negotiation research in auditing*, Account. Horizons, **22** (2008), no. 1, 91–109.

[12] A.C. Bucaro, *Enhancing auditors' critical thinking in audits of complex estimates*, Account. Org. Soc. **73** (2019), 35–49.

[13] C. Caramanis and C. Lennox, *Audit effort and earnings management*, J. Account. Econ. **45** (2008), no. 1, 116–138.

[14] M.B. Clement, L. Koonce, and T.J. Lopez, *The roles of task-specific forecasting experience and innate ability in understanding analyst forecasting performance*, J. Account. Econ. **44** (2007), no. 3, 378–398.

[15] J.R. Cohen, G. Krishnamoorthy, and A.M. Wright, *Form versus substance: The implications for auditing practice and research of alternative perspectives on corporate governance*, Audit. **27** (2008), no. 2, 181–198.

[16] L.E. De Angelo, *Auditor independence, 'low balling', and disclosure regulation*, J. Account. Econ. **3** (1981), no. 2, 113–127.

[17] D. Deliu, *Elevating professional reasoning in auditing. Psycho-professional factors affecting auditor's professional judgement and skepticism*, IBIMA Bus. Rev. **2020** (2021).

[18] R.Z. Elias, *The impact of professional commitment and anticipatory socialization on accounting students' ethical orientation*, J. Bus. Ethics, **68** (2006), no. 1, 83–90.

[19] D. Fayard, L.S. Lee, R.A. Leitch, and W.J. Kettinger, *Accounting, organizations and society effect of internal cost management, information systems integration, and absorptive capacity on inter-organizational cost management in supply chains q*, Account. Organ. Soc. **37** (2012), no. 3, 168–187.

[20] S.G. Fingland, J.S. Pickerd, and M.D. Piercey, *How does high uncertainty in accounting estimates impact auditor litigation risk? Opposite effects in jury trials and attorneys' out-of-court settlements*, Curr. Issues Audit. **17** (2023), no. 2, 1–8.

[21] H. Fu, H.T. Tan, and J. Zhang, *Effect of auditor negotiation experience and client negotiating style on auditors' judgments in an auditor-client negotiation context*, Audit. **30** (2011), no. 3, 225–237.

[22] M. Gibbins, S. Salterio, and A. Webb, *Evidence about auditor–client management negotiation concerning client's financial reporting*, J. Account. Res. **39** (2001), no. 3, 535–563.

[23] L. Gitelman, *Paper Knowledge: Toward a Media History of Documents*, Duke University Press, 2014.

[24] A. Gold, M. Heilmann, C. Pott, and J. Rematzki, *Do key audit matters impact financial reporting behavior?*, Int. J. Audit. **24** (2020), no. 2, 232–244.

[25] R.C. Hatfield, C.P. Agoglia, and M.H. Sanchez, *Client characteristics and the negotiation tactics of auditors: Implications for financial reporting*, J. Account. Res. **46** (2008), no. 5, 1183–1207.

[26] R.C. Hatfield and C. Mullis, *Negotiations between auditors and their clients regarding adjustments to the financial statements*, Bus. Horiz. **58** (2015), no. 2, 203–208.

[27] J. Hollindale, P. Kent, and R. McNamara, *Auditor tactics in negotiations: A research note*, Int. J. Audit. **15** (2011), no. 3, 288–300.

[28] R. Jaffar, N.A. Abu, M.S. Hassan, and M.M. Rahmat, *Value relevance of board attributes: The mediating role of key audit matter*, Int. J. Financ. Stud. **11** (2023), no. 1.

[29] P.K. Kang, Y.C. Kim, and D. Palmon, *Client's bargaining power and audit negotiation over earnings: Evidence from audit processes in a business groups environment*, Group Decis. Neg. **29** (2020), no. 6.

[30] E. Kulset and I. Stuart, *Auditor–client negotiations over disputed accounting issues: Evidence from one of the Norwegian big 4 firms*, Int. J. Audit. **22** (2018), no. 3, 435–448.

[31] S. Lhuillery, M. Tellechea, and S. Thiéry, *Innovation in lieu of compliance: Internal audit departments' standardized and non-standardized knowledge sources*, Technovation **123** (2023).

[32] O.E. Lubenchenko, *A new quality management system in auditing*, Info. Commun. Stat. Ukr. **97** (2022), no. 2, 85–94.

[33] S. McCracken, S.E. Salterio, and M. Gibbins, *Auditor-client management relationships and roles in negotiating financial reporting*, Account. Organ. Soc. **33** (2008), no. 4–5, 362–383.

[34] S. McCracken, S.E. Salterio, and R.N. Schmidt, *Do managers intend to use the same negotiation strategies as partners?*, Behav. Res. Account. **23** (2011), no. 1, 131–160.

[35] B. Malsch and Y. Gendron, *Reining in auditors: On the dynamics of power surrounding an "innovation" in the regulatory space*, Account. Org. Soc. **36** (2011), no. 7, 456–476.

[36] M.J. Mol and J. Birkinshaw, *The sources of management innovation: When firms introduce new management practices*, J. Bus. Res. **62** (2009), no. 12, 1269–1280.

[37] A. Musah, *Determinants of audit fees in a developing economy: Evidence from Ghana*, Int. J. Acad. Res. Bus. Soc. Sci. **7** (2017), no. 11, 716–730.

[38] L. Nguyen, L. Vu and X. Yin, *The undesirable effect of audit quality: Evidence from firm innovation*, Br. Account. Rev. **52** (2020), no. 6, 100938.

[39] J. Omran, B. Firwana, A. Al-dadah and M. Alpert, *Arrhythmias and clinical EP relation of obesity to ventricular repolarization: A meta-analysis of clinical*, J. Am. Coll. Cardiol. **65** (2015), no. 10, A337.

[40] D. Otley, *The contingency theory of management accounting and control: 1980–2014*, Manag. Account. Res. **31** (2016), 45–62.

[41] D.A.G. Padma Wedari and N.K. Sumadi, *Pengaruh fee audit, independensi dan profesionalisme auditor terhadap kualitas audit Di KAP Provinsi Bali*, Hita Akunt. Keuang. **4** (2023), no. 1, 258–273.

[42] A. Pérez, E.K. Santamaria, D. Operario, E.E. Tarkang, F.B. Zotor, S.R. de S.N. Cardoso, S.E.U. Autor, I. De, A. Dos, O.D.E. Vendas, D.A.S. Empresas, P.O. Atividades, N. Artigo, G.N.R.M.D.E. Gest, D.E.F. Para, S.F. da R. Miranda, F.A.A. Ferreira, J. Oliver, M. Dario, and J.E. Volk, *Health communication from teory to practice*, BMC Public Health **5** (2017), no. 1, 1–8.

[43] G. Puthukulam, A. Ravikumar, R.V.K. Sharma, and K.M. Meesaala, *Auditors' perception on the impact of artificial intelligence on professional skepticism and judgment in Oman*, Univ. J. Account. Financ. 9 (2021), no. 5, 1184–1190.

[44] P.A. Sari, S. Sumiadji and A. Syuliswati, *Urgensi judgment auditor dalam otomatisasi proses audit*, Organ. J. Sain. Manaj. Akunt. **5** (2022), no. 1, 38–49.

[45] R.I. Satya and E.R. Shauki, *Remote audit post covid-19 pandemic in achieving professional skepticism auditor: Implementation of social presence theory (case study on the financial and development supervisory agency)*, Proc. 7th Sriwij. Econ. Account. Bus. Conf. (SEABC 2021), 2022, pp. 346–354.

[46] W. Setyowati, P.C. Kurniawan, A. Mardiansyah, E.P. Harahap, and N. Lutfiani, *The role of duty complexity as a moderation of the influence auditor's professional knowledge and ethics on audit quality*, Aptisi Trans. Manag. **5** (2021), no. 1, 20–29.

[47] A.K. Soe, B. Gavurova, J. Oláh, and M. Hasan, *Does auditor's attributes impact on professional judgement in a financial audit? Empirical evidence from Myanmar Sai*, Bus. Theory Pract. **23** (2022), no. 1, 218–230.

[48] L. Songini, S. Armenia, C. Morelli, and A. Pompei, *Managerialization, professionalization and firm performance in family business: A systems thinking perspective*, Syst. Res. Behav. Sci. **41** (2024), no. 1, 1–19.

[49] K. Ullah, T. Bagh, and M. Arif, *Factors affecting dividend policy: An empirical investigation of food sector of Pakistan*, Res. J. Finance Account. **10** (2019), no. 5, 2222–1697.

[50] I. Utami and E. Nahartyo, *Riset eksperimental pengauditan: Evolusi dan topik kontemporer*, J. Akunt. Keuang. Indones. **10** (2013), no. 1, 60–79.

[51] A. Wicaksana and T. Rachman, *Analisis faktor-faktor Yang mempengaruhi pendapatan pedagang makanan disekitaran boulevard dua, kecamatan Tuminting, kota Manado,* Angew. Chemie Int. Ed. **6** (2018), no. 11, 951–952.

[52] N.W.A.N. Widiyanti and I.P. Nuratama, *Pengaruh gender, kompetensi profesional, pengalaman auditor tehadap audit judgment di kantor akuntan publik provinsI Bali*, Hita Akunt. Keuangan **2** (2021), no. 2, 117–140.