

## Identification of the Factors Affecting Auditors' Conflict of Interests Using Fuzzy Delphi Method

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### Abstract

The present study aimed to identify the most effective causes of conflict of interest by examination of accounting literature and expert consensus. Understanding these factors, using cognitive psychology theories, can lead to a model for reducing conflict of interests. The dignity of the audit profession depends on fair and proper professional judgment by auditors, and achieving this requires identification and controlling of the key factors affecting judgment and decision-making. When auditors intentionally or unintentionally accredit

financial statements in line with the opinion of their employers, public interests and the auditing profession are at serious risk. Several factors that can categorize into seven categories of structure, community, culture, environment, personality, audit firm characteristic, and ethics and behavior are rooted in a conflict of interests. However, no comprehensive research examining all the above factors and identifying the most effective ones has been done so far. By reviewing the research literature, major and minor factors were identified in domestic and foreign sources. Ten expert auditors were selected by the snowball method and interviewed. The considered major and minor factors were selected from among the introduced factors, and a questionnaire was sent to the experts using the Fuzzy Delphi (Screening) method. The results of the above statistical analysis identified eighteen of the most prominent sub-criteria of the factors affecting conflict of interests and identified structural factors the highest rank in this classification, which was agreed by the experts.

**Keywords:** Conflict of Interests, Deviant Decision-Making, Fuzzy Delphi

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## **Introduction**

The moral scandal of corporate such as Enron in 2001 and WorldCom in 2002 raised expectations from auditors for strict and comprehensive observation of all ethical guidance and put the issues related to ethical decision-making in financial reporting at the center of attention (Tepalagul and Lin, 2014; Church et al., 2015). Concerning the importance of auditors' ethical decision-making in the enhancement of credibility of the profession, it is discussed what factors lead to auditors' ethical decision-makings (Saghafi et al., 2011). Factors affecting the emergence of auditors' conflict of interests can intentionally or unintentionally impair auditors' ethical decision-making.

Despite the existence of accounting rules and regulations, scandals arising from conflict of interests are very pervasive. For example, the companies of Deloitte was fined as equal to 10 million dollars in 2013, PwC was equal to 25 million dollars in 2014, EY was equal to 250000 Pounds in 2015, and KPMG was equal to 390000 Pounds in 2015 (Agnew, 2015; Crump, 2015). At the time of conducting this study, the largest litigation to handle fraud in British history was held in London on March 25, 2019. In this court, the American company

Hewlett Packard HP sued the head of the Autonomy software company with a 5 billion dollars compensation claim for fraud in the company's accounts (Quoted from Khabar Online, Sunday, March 31, 2019).

The question that will answer in this study: What are the key factors affecting the conflict of interests? The study seeks to provide a good answer to the above question relying on an exploratory study, interview with experts in the profession, and analysis of the results using the Fuzzy Delphi method. From a practical point of view, the results of this study can lead to the identification of key factors affecting conflict of interests and they can be used as important variables for the application of cognitive psychological theories in proposing models for controlling and reducing conflict of interests.

### **Theoretical foundations**

Auditors, on the one hand by accrediting financial reports protect public interests, and on the other hand, they engage in a for-profit entity where they need to provide services to the employers in order to obtain earnings. One of the main concerns of the profession, legislators, and the public is when the two roles are in conflict (Vinciguerra, Barbara.2001).

Conflict of interest is a situation in which some people (an individual or large corporate) fall into a particular relationship with one or more decisions. As a standard, a person has a conflict of interests if 1) the person is in relation to another person who asks him/her for judgment in favor of another; and 2) the person has certain interests that he/she tends to interfere with the proper exercise of judgment in that issue (Davis, 2006).

Serving the public interests, including investors, loan provider banks, credit institutions, and legislators is among the primary interests of auditors. Pierce (2007), and Clements, Neill and Stovall (2012) argue that the main task of auditors is to protect the public interests by reporting on the fairness of the client's financial statements. Likewise, the Code of Ethics for Professional Accountants stipulates that observation of fundamental principles of professional accounting (integrity, realism, professional competence, and due diligence, privacy, and professional conduct) is considered a primary interest of professional accounting (International Ethics Standards Board for Accountants, IESBA, 2015).

The Code of Ethics for Professional Accountants introduces various threats (self-interest, self-examination, advocacy, acquaintance, and intimidation threats) following the fundamental principles of professional accounting. These threats are recognized as a source of secondary interests to

auditors (IESBA, 2015).

Conflict of interest is defined as a state of conflict between the primary and secondary interests of auditors, which in turn leads to deviant decision-making behavior toward ethical or consistent behavior (IESBA, 2015). The application of ethical principles in assessing is the correctness of a decision or behavior known as consistent or ethical decision-making (HassasYeganeh, Kazempour, 2013). Deviant decision-making behavior occurs through a wide range of inconsistent practices such as forgery, poor quality worksheets, prioritizing customer satisfaction over specialized standards, maximizing profits by reducing quality costs, and inappropriate issuance of auditor's opinion and so on. In order to control and reduce conflict of interests, it seems necessary to identify the key factors affecting judgment and decision-making; and, use cognitive psychology theories and manage them, to increase the quality of professional judgment of auditors and provide the possibility of achieving wise decision-making (Valian et al., 2019). The results of the present study will lead to the identification of appropriate variables to complement the process of future explorations in the area of controlling and reducing the conflict of interests of auditors

## Literature Review

Gregory Jenkins, J. & Jonathan, D. Stanley(2018), in a study titled "Auditors' independence in the United States: the foundation of the profession or a thorn next to us" analyze the current monitoring of auditor independence in the United States and the need for auditor independence from the perspective of different groups involved in the financial reporting process. Finally, Church et al. evaluate the alternative for the current monitoring approach (prohibiting various auditor-client relationships to manage auditor independence) and conclude that the current path is not sustainable even with the expansion of the law for this profession. Instead of continuing under the current monitoring, they offer two possible options. First, increased resources and authority of the audit committees under SOX will allow the audit committee to have more responsibility and flexibility to manage auditor independence. Second, they suggest that additional disclosures about threats and guarantees for auditor independence may be beneficial to stakeholders. A combination of these two approaches is valuable to address a number of problems and challenges related to the current monitoring system.

Asri and Bangun (2017) in their study entitled "Auditor ethical decision-making" examined the impact of financial information on ethical decision-

making, ethical ideology, ethical environment, professional ethics, and commitment to the profession, and concluded that financial information has a positive and significant impact on ethical decision-making of auditors. Five moderating variables reinforce the impact of financial information on an auditor's ethical decision-making. In ethical decision-making, the auditor is unable to put aside personal interests while being able to make difficult decisions according to ethical values; norms that applied to the auditor title without fear of losing the job.

Modarres, Ahmad et al., (2016) in their study entitled "Safeguards affecting auditor independence against employer's replacement threats" examined the factors affecting auditor independence using a questionnaire with a nominal distance scale. The nominal scale is used to determine the extent of impact and the distance scale is used to evaluate the existing situation. In this study, legal assignment of tasks, size of the audit firm, penal system, peer review, disclosure of auditor change reasons, improvement of the knowledge level of users of audit report, clarification of auditor responsibility, communication with the former auditor, guaranteeing responsibility of auditor's partners with the audit firm, restriction of the ratio of payment received from an employer. Periodical changing of auditor and not changing him at that period are effective factors according to the auditors, but the extent of the impact on the status quo is much lower than the ideal state.

Clements et al., (2012) in their study entitled "Inherent conflicts of interest in the accounting profession" conclude three reasons for conflict of interest in auditing. 1) Because the auditor's wage is paid by the management. 2) Because of the existence of conflicting requests in the Code of Professional Conduct, as according to the Code of Professional Conduct, the auditor, on the one hand, is responsible for maintaining the trust of the employer and, on the other hand, is responsible for maintaining the trust of the public. 3) Because in the audit literature, an employer is considered as equal to single management rather than stakeholders there, such as shareholders. Therefore, rather than advocating or protecting the interests of stakeholders, he/she will be advocating or protecting the interests of management. The study presents only the inherent causes of conflict of interest.

In the study by Saghafi et al., (2011) titled "Factors affecting ethical decision-making of Iranian official accountants" the factors and indicators influencing decision-making are extracted using content analysis technique or Theme analysis method. Individual characteristics of the official accountant (official accountant income, professional reputation, law orientation,

level of ethical growth, religious beliefs, experience, and demographic variables). Working environment characteristics (audit complexity, audit fees, potential conflict of interests between auditor and employer and private or non-private employer, and application of corporate governance) are recognized as the most important factors for the promotion of ethical and professional decision-making of official accountant.

Guiral et al., (2010), in a study entitled "Ethical dilemmas in auditing: dishonesty or unintentional bias?" applied decision-making, operational ability model, to examine ethical dilemmas (self-fulfilling prophecy, risk of litigation, and warning duty); and they argue that the theory of ethical misleading shows that auditors by understanding the consequences of their opinions are exposed to ethical risk. It seems that the root of audit problems leads to an unintentional bias rather than dishonesty.

Moore, Tanlu, and Bazerman (2010) in a study entitled "Conflict of interest and the intrusion of bias" in three experiments (errors due to role, the role of financial rewards, and the role of personal relationships) with three different working groups examined the effect of conflict of interests on public statements and private judgments from the psychological dimension of conflict of interests. The results show that judgments are simply influenced by dependence on stakeholder fans and this influence generalized to judgments that are clearly motivated to be neutral. The consistency observed between public and private judgments indicates that the participants believed in their biased assessments. The study results indicate that the psychological dimension of conflict of interests is different from the usual thinking of economists and policymakers about the problem.

Khoshtinat and Bostanian (2008) in a study entitled "Professional judgment in audit" examined the factors influencing professional judgment by Delphi test and were recognized personality traits (knowledge, experience, integrity, adherence to ethical bases, and professional skepticism). Environmental factors (professional monitoring on audit work, accountability, dissemination of information related to scores, and controlling of audit quality) as the factors affecting professional judgment in auditing.

## **Research Methodology**

The present study is fundamental in terms of its outcome and is qualitative in terms of approach. Due to exploration to recognize the factors affecting conflict of interests through library and fieldwork study, it is an exploratory study. In this study the phenomena are studied in their natural state without

manipulation; so, it can be called a descriptive research method. The selected experts by judgment and snowball sampling method include professors, researchers and managers with research and work in the field of auditing and accounting with more than 25 years of auditing experience and have been members of this professional institution since the establishment of the Society of Certified Public Accountants. Four of the experts have professional activity in the public sector and six in the private sector. Four experts have a PhD degree and six have a master's degree, and all of them had more than 15 years of experience as an official judicial experts and nine of them are over 50 years old.

In this study, 92 sub-criteria were collected through the study of books, articles, master's theses, doctoral dissertations, journals and publications, valid data using expert methods, interviews and fuzzy Delphi, and then the identified factors were classified into seven main categories. Similar sub-criteria or those close to the same concept integrated and finally, the seven major factors including Audit structure, Personality characteristics of auditors, Cultural factors, Environmental factors, Ethics and behavior, Audit institution characteristics, Social component were identified as the main elements, and 37 subsidiary factors of conflict of interests were placed in this classification. Finally, collecting the experts' opinions and analyzing them using the Fuzzy Delphi method, the most effective criteria were identified.

## **Factors of conflict of interests**

### **A. Factors arising from Audit structural**

The source of conflict of interest is believed to be due to various organizational features of the audit profession such as long-term customer relationships, hiring former auditors by customers, providing non-audit services, and hiring and firing auditors by customers due to structural arrangements (Boyd, 2004). Each of these cases is explained below:

1. Long-term customer relationships: The close relationship of professional accounting firms with customer management to ensure a regular revenue stream is the major cause of conflict of interest in professional independence (Arel, Brody, and Pany, 2006).
2. Conflict of interests due to a job opportunity with clients: Clients tend to hire auditors who are familiar with their accounting and business systems, but the employment of former members of the audit team is a clear violation of professional independence

3. Conflict of interests due to providing non-audit services: It is believed that providing non-audit services to clients leads to disruption of auditors' independence and damages audit quality.

4. Conflict of interests due to cancellation or conclusion of an audit contract, the client's audit committee is responsible for concluding a contract with the auditor. However, in practice, client management will have a significant influence on decisions on conclusion or termination of the contract, and professional ethics states that when clients have the power to conclude or terminate the audit contract, there will be various threats to adherence to principles of professional ethics (Pierce, 2007; Goto, 2004).

### **B. Personality characteristics of auditors**

People's personalities are made up of different layers. Intelligence, values, skills and experience, education and training, behaviors, and visible emotions of an individual are some of these layers. In any decision-making subject, the personality factor has an undeniable impact on decision-making.

In the study by Nasution (2013) on personality characteristics against threats, two sources of control were mentioned:

1. Internal locus of control
2. External locus of control

Locus of control is one of the variables studied in psychology and other social sciences including accounting research (Rotter, 1990; Patten, 2005; Hyatt and Prawitt, 2001; Tsui and Gul, 1996; Singer and Singer, 1985). Locus of control is the extent to which individuals believe that reinforcement or outcome of their behavior is dependent on their personal behavior or characteristics (internal locus of control). The extent to which individuals believe that the outcome of their behavior is a function of luck, chance, and a function of others' control, and are less willing to accept the responsibility of the consequences of their behavior (external locus of control).

According to the study by Khoshtinat and Bostanian(2008) entitled "Professional judgment in Audit", knowledge and experience, integrity, and adherence to ethical bases and professional skepticism (most interviewees described professional skepticism as the intrinsic substance of an auditor) are among the personality factors influencing professional judgment. Also according to the study by Saghafi et al.(2011) titled "Factors affecting ethical decision-making of Iranian official accountants", auditor's economic conditions are considered as the sub-criterion of personality factor. Interviewee number 8 mentioned the ability to apply standards, understanding the related

laws, experience, and religious belief as to the most important sub-criteria in the category of personality factors.

### **C. The influence of cultural factors**

In the late 1960s to 1970s, Hofstede conducted a large survey about the difference between cultural values of 117000 IBM employees sampled in 55 countries concerning their behavior and participation. In 2010, the sample expanded to 76 countries. Hofstede identified four prominent dimensions; Michael H. Bond et al., (1991) and Michael Minkov (2010) identified two prominent dimensions (Hajiha and Soltani, 2014).

1. Individualism versus collectivism: Individualism is a criterion that represents the relationships between individuals and groups in a community.

Individualism refers to a degree of relative importance for members of a society in relation to beliefs and well-being, such that individuals and their close surrounding people have intimate relationships. Members in societies with more power distance are more vulnerable to obedience pressure than societies with less power distance. In addition, individuals in societies with less individualism are more vulnerable to conformity pressure than societies with more individualism (Hall and Lankfield, 2005).

2. Power distance: Power distance is a criterion that shows the differences in the distribution of power among individuals in a society and reflects the range (extent) of inequalities in power distribution from the perspective of weak individuals in organizations. Where power distance is high, subordinates are highly reliant on their superiors (Nasution, 2013).

3. Avoidance of uncertainty about the future and ambiguity or uncertainty avoidance: The concept of uncertainty avoidance is the opposite point of ambiguity and doubt. In communities where there are low and limited transparency and high doubt, there is a mass of cumbersome and sometimes contradictory rules and regulations (Participant number 5 considered this challenge to be very important). In such a community, the effective factors of transparency and accountability, including clear laws, do not exist, and on the contrary, due to the existence of different and various laws and procedures, they lack an appropriate and efficient administration system and naturally have high corruption and fraud (BaniMahd and Nejati, 2016).

4. Masculinity versus Femininity: Masculinity is a criterion that shows the extent of people's tendency to have perky behavior rather than a modest behavior (according to participant number 9 it is not a matter of gender difference). In masculine societies, men are more inclined to gain job successes

out of home and women are more interested in looking after the home and children (Moradi and Fakhrabadi, 2009).

5. Long-term orientation: This was introduced by Michael Bond et al. It discusses how to strengthen virtues in society. For example, societies with a long history, like most East Asian and European countries, reinforce the virtues based on future rewards and focus on providence and perseverance. In short-lived communities such as New Zealand, the US, and Australia, the virtues related to the past and present are reinforced. People respect traditions and focus on the absolute truth of rapid development (Hajiha and Soltani, 2014).

6. Indigence versus restraint: It introduces by Michael Minkov and expresses the view of societies about the basic and natural tendencies of humankind. Easygoing and tolerant cultures such as Latin America, parts of Africa, the English-speaking world, and Northern Europe support enjoyable life, while restrictive cultures such as East Asia, Eastern Europe, and the Muslim world regulate people's desires by relatively rigid social norms (Zheng Fang et al., 2013).

7. Obedience pressure: It is applied by a person with greater power in a higher organizational hierarchy (Milgram, 1974). The behavior of an individual with greater authority and power can influence the behavior of those around him/her by his/her specific views and give them an intellectual framework. These people may be indifferent to the execution of such actions prescribed by the superior or powerful authority, even if they conflict with their individual beliefs and principles (Nasution, 2013).

8. Conformity pressure: Conformity pressure created by colleagues or peers. In this case, the individual is under pressure to conform to the beliefs, practices, and attitudes of his or her peers. Obedience and conformity pressures can affect an auditor's independence when the instructions or suggestions of the audit supervisors or associates conflict with the principle of independence (Nasution, 2013). However, findings by DeZoort and Lord, (1997) only confirmed in the context of auditing. Other variables (e.g. cultural dimensions) may play an important role in the area of social pressures.

#### **D. Environmental factors**

Audit studies have shown that diversity of organizational levels (in terms of experience) also affect auditor's judgment and the impact of diversity of organizational levels on judgment changes with the increase in job complexity (Tan and Kao, 1999; Libby, 1995). The working environment can play an important role in auditors' decisions and judgments.

1. Laws and regulations; case laws (business, taxes, etc.), Code of Professional Conduct and Stock Exchange Laws.
2. Tools and devices such as checklists and programs and computer devices.
3. Execution of corporate governance; a set of relationships between company management, boards of directors, shareholders, and other stakeholders. In addition, it provides a structure through which goals of the company, the means of achieving it, the goals, and monitoring of the company performance are determined.

#### **E. Ethical and behavioral factors**

Today, it is hard to find a large business without having even one important accounting scandal. People in the accounting profession should observe a high level of accuracy in their professional services, and their ethical decision-making is necessary for obtaining an efficient and fair capital market and optimal allocation of resources. Some of the items that are likely to influence conflict of interests and classified under ethics and behavior investigated as below:

1. Social loafing: The term social loafing was first used by Lathan et al., in 1979. They used the term to describe the phenomenon of reduction of people's work effort when working in a group. They believed that contrary to the common belief that when individuals work together in a team or group, it causes more effort, in fact, it is not true in practice, and it leads to reduced efficiency (Latané et al., 1979). In auditing, when individuals do something in the framework of a group, they will be subject to loafing issues, and on this basis, it is likely that the auditor will reduce the quality of his/her work in performing an audit. The interviewees number 5 and 6 believed in the probability of loafing in the private sector (Bagheri, Salimi and Akbari, 2013).
2. Disorder in rewards: Goto (2004) showed that rewarding the truth positively related to ethical behaviour, and vice versa. Anyway, a culture of greed creates behavioral changes and no law can solve it unless companies make their efforts; so, we need to encourage an environment that desirable ethical behavior is its reward.
3. Unintentional bias; emotional and psychological factors (Guiral Andres et al., 2009): The role of auditors in evaluating the ability of the client is necessary for the continuance of operations for financial statement users. Investors, creditors, customers, and other market participants want to know if they considered the company exposed to bankruptcy risk or not. Therefore, given the auditor experts' knowledge and their access to the information that is

the basis of the development of financial statements, users expect warning signals from auditors. However, numerous recent financial scandals highlighted the debate on auditors' lack of independence and their unwillingness to issue warning signals. Various ethical dilemmas simultaneously affect auditors' decision-making process. Auditors' perceptions of the consequences of issuing a qualified audit opinion are essential determinants of auditors' decisions. Specifically, the effect of the three audit dilemmas: the assumption of self-realization, litigation risk, and the duty to provide whistle-blowing functions is probably due to unintentional bias.

4. Ethical sensitivity: Ethical sensitivity is the identification of the ethical dimension of the issues under consideration. This identification was obtained after identifying the interests of all stakeholders, knowing their goals, intentions, and welfare, and examining the impact of the decision on the interests of these people.

5. Professional ethics: It includes impartiality, confidentiality, integrity, professional competence, professional care, and professional conduct. The Code of Professional Conduct is vital as a guide for auditors' behavior, and experience is essential as a basic factor for better understanding and applying it (HassasYeganeh, and Maghsoudi. 2011).

6. Judgment based on intuition and emotions (Kaldoust, Majid et al., 2018): The decision-making process models are divided into two logic-based and illogical groups. Logical models, in particular, are based on the pre-assumption that the process of ethical reasoning is the core of the model and leads to ethical judgment, while illogical models assume that ethical judgment is based on intuition and emotion, and that logic, through providing reasons, tries to justify ethical judgment. In an ethical decision-making situation, intuition means immediate perception without reflection and research, of the good and true or the bad and evil. In other words, intuitive ethical decision-making seems evident for ethical actions.

#### **F. Characteristics of the audit firm**

In the present study, three audit firm characteristics from the study by Saghafi, Mehrani, Musakhani and Sepasi,(2011) titled "Factors affecting ethical decision-making of Iranian official accountants", and firm size according to the study by Modarres; Ebrahimiand Azizkhani, (2016) titles "Safeguards affecting auditor independence against the employer's threat of replacement" were used.

1. Number of partners
2. Firm size
3. Goals and policies of the organization

4. Private or non-private organization

**G. Social factors**

In the present study the items of professional reputation, improvement of the knowledge level of information users, and clarifying auditor's responsibility were selected from the study by Modarres; Ebrahimi and Azizkhani,(2016) and organizational culture from the study by Saghafi et al, (2011).

1. Improvement of the knowledge level of information users
2. Professional reputation
3. Organizational culture
4. Clarification of auditor’s responsibility

The adverse effects of auditors’ misconduct affect a wide range of people. Litigation against auditors both increases the defense cost of auditors and damages the auditor’s reputation. Therefore, clarification of the auditor's responsibility can reduce the likelihood of the auditor's acceptance of inappropriate requests of employers.

**Selection of the criteria using the Fuzzy Delphi method**

Delphi method generates a group communication process in a way that involves independent components but can solve complex problems (Mintzberg, 2001). Delphi method, due to having multiple interactions between experts, is highly rich compared to methods such as navigation

(Fakursiyeh et al.2014). The steps of implementing the Fuzzy Delphi method are conceptualized as below (Kuo, Y. F., & Chen, P. C, 2008; Lee et al., 2010).

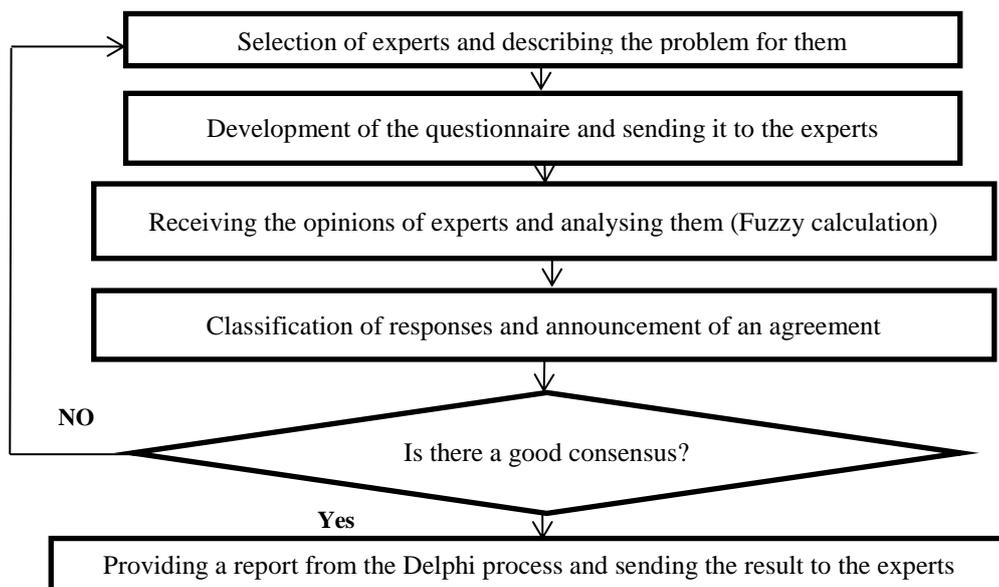


Figure 1. Algorithm for implementation of Fuzzy Delphi method

Step 1: Use a questionnaire and organization of an expert panel to express the conservative (minimum) and optimistic (maximum) values. The importance of each criterion in the S probability set is shown in the range of 1 to 10 points as  $(L_{ik}, U_{ik})C_{ik}$ , where  $L_{ik}$  and  $U_{ik}$  are conservative indexes, and the optimistic index is  $i$  criterion which is ranked respectively by the expert.

Step 2: Organization of the experts' opinions collected from the questionnaires and determination of TFN for the most conservative index,  $MC_i, UC_i)(LC_iC_i$ , and the most optimistic index  $O_i = (LO_i, MO_i, UO_i)$  for each  $i$  criterion. Use the conservative index,  $MC_i, UC_i) (LC_iC_i$ , because  $LC_i$  represents the least conservative value of the experts:

$$LC_i = \min (L_{ik}) \tag{1}$$

$MC_i$  is the geometric mean of the most conservative value of experts for  $i$  criteria. This obtained from equation 2:

$$MC_i = (L_{i1} \times L_{i2} \times \dots \times L_{ik})^{1/k} \tag{2}$$

$UC_i$  represents the maximum conservative value of the experts:

$$UC_i = \max (L_{ik}) \tag{3}$$

Similarly, the least ( $LO_i$ ), geometric mean ( $MO_i$ ), and maximum ( $UO_i$ ) of the most optimistic group for the  $i$  criterion can be obtained.

Step 3: Calculation of TFN for the most conservative index,  $C_i = (LC_iMC_i, UC_i)$  and the most optimistic index,  $O_i = (LO_i, MO_i, UO_i)$  for the remaining strategies  $A_i, i \in S$ .

Step 4: Examination of consistency of experts' opinions and calculation of significance value,  $G_i$  for each criterion. The gray area (Hsu YL .2010; Lee et al., 2010), the overlapping part of  $C_i$  and  $O_i$  in Figure 2, is used to examine the consensus of experts on each criterion and to calculate the total significance value of  $G_i$ .

If the TFN pair do not overlap (i.e.  $UC_i \leq LO_i$ ) and there is no gray area, the expert's opinion about the criterion  $i$  has reached a consensus level, and the consensus significance value is calculated as below:

$$G_i = \frac{MC_i + MO_i}{2} \tag{4}$$

If there is an overlap (i.e.  $UC_i > LO_i$ ) and the gray area interval value  $g_i$  equals  $UC_i - LO_i$  and  $g_i$  are less than the interval value of  $C_i$  and  $O_i$  ( $d_i = MO_i - MC_i$ ), i.e.  $g_i \leq d_i$ , then the significance value of  $G$  is determined according to the

tangent point  $P(\mu_L, \mu_U)$  of the gray area. The significance value of  $G_i$  for each criterion is obtained through equations 5 and 6.

$$G_i = \max \left\{ \int_p [\min(\mu_L(p), \mu_U(p)) dp] \right\} \tag{5}$$

$$G_i = \frac{UC_i \times MO_i - LO_i \times MC_i}{(UC_i - MC_i) + (MO_i - LO_i)} \tag{6}$$

If there is a gray area and  $g_i > d_i$ , there will be a huge difference between experts' opinions. Steps 1.1 to 1.4 must be repeated until convergence is achieved (Ishikawa et al., 1993).

Step 5: Extraction of the criteria from the selected list. The significance value compared to the T threshold value, which was obtained by experts subjectively, based on the geometric mean of all significance values of  $G_i$  consensus (Ishikawa et al., 1993; Hsu YL 2010; Lee, 2010). If  $G_i > T$ , the i criterion is selected for further analysis.

### Research Findings

The following table shows the scores obtained from 1 to 10 for the pessimistic and optimistic states according to the opinions of 10 experts on the importance level of the sub-criteria and indicators.

Table 1. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
<b>Structural</b>							
<b>Long-term relations</b>	1	7	6	10	2.36	7.65	5.51
<b>Job opportunity</b>	1	8	5	10	3.12	7.22	6.00
<b>Non-audit services</b>	1	7	5	9	3.94	7.21	6.40
<b>Termination or conclusion of audit contract</b>	1	8	5	8	3.84	6.39	8.51

\* Threshold limit = 6.61

Result: The threshold limit value obtained from the mean of significance value column (6.61).

Conclusion: Among the four dimensions, dimensions of long-term relationships, job opportunity, and non-audit services, compared to other dimensions, have a significance value lower than the threshold limit (6.61) and will be deleted; and the dimension of termination or conclusion of audit contract, given that its significance value is greater than the threshold limit, will be selected.

Table 2. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
Personality characteristics of auditors							
<b>Internal control</b>	1	6	4	9	2.83	6.21	4.11
<b>External control</b>	0	7	4	9	0.00	6.20	3.88
<b>Religious beliefs</b>	1	6	5	10	3.00	7.60	4.44
<b>Law-orientation</b>	1	7	5	10	3.26	7.43	5.32
<b>Economic conditions</b>	1	7	4	10	2.47	7.26	4.48
<b>Experience</b>	1	6	5	9	3.68	6.89	5.23
<b>Knowledge</b>	1	6	5	10	3.12	7.39	4.44
<b>Professional skepticism</b>	1	7	5	9	4.15	6.96	6.54

\* Threshold limit = 4.80

Result: The threshold limit value obtained from the mean significance value column (4.80).

Conclusion: Among the eight existing dimensions, the dimensions of internal control, external control, religious beliefs, economic conditions, and knowledge, compared to other dimensions, have a significance value lower than the threshold limit (4.80) and will be deleted; and the dimensions of law-orientation, experience, and professional skepticism, given their significance value is greater than the threshold limit, will be selected.

Table 3. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
<b>Cultural</b>							
<b>Individualism versus collectivism</b>	1	6	4	9	2.96	6.62	4.25
<b>Power distance</b>	1	5	4	9	3.26	6.76	3.59
<b>Uncertainty avoidance</b>	1	5	5	9	3.22	6.10	3.97
<b>Masculinity versus Femininity</b>	1	5	4	8	2.66	5.26	3.58
<b>Long-term orientation</b>	1	5	1	9	2.36	4.09	1.86
<b>Indigence versus restraint</b>	1	6	1	10	2.43	4.67	2.28
<b>Obedience pressure</b>	1	8	6	10	3.36	7.68	6.98
<b>Conformity pressure</b>	1	6	4	8	3.52	6.65	5.10

\* Threshold limit = 3.95

Result: The threshold limit value obtained from the mean significance value column (3.95).

Conclusion: Among the eight existing dimensions, the dimensions of power distance, masculinity versus femininity, long-term orientation, and indigence versus restraint, compared to other dimensions, have a significance value lower than the threshold limit (3.95) and will be deleted. The dimensions of individualism versus collectivism, uncertainty avoidance, obedience pressure, and conformity pressure, given their significance value being greater than the threshold limit, will be selected.

Table 4. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
Environmental							
Laws and regulation	1	8	5	9	3.07	7.26	6.71
Tools and devices	1	7	3	10	2.02	5.56	3.50
Application of corporate governance	1	8	5	9	3.42	6.98	6.94

\* Threshold limit = 5.72

Result: The threshold limit value obtained from the mean significance value column (5.72).

Conclusion: Among the three existing dimensions, the dimension of tools and devices, compared to other dimensions, have a significance value lower than the threshold limit (5.72) and will be deleted; and the dimensions of laws and regulations and application of corporate governance, given their significance value is greater than the threshold limit, will be selected.

Table 5. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
Ethics and behavior							
Social loafing	1	5	4	9	2.97	5.79	3.32
Disorder in rewards	1	5	3	9	3.19	6.65	3.18
Unintentional bias	1	5	1	7	2.62	3.61	2.21
Ethical sensitivity	1	6	4	8	3.16	5.51	4.71
Professional ethics	1	7	6	10	3.32	8.03	6.07
Intuition-based judgment	1	6	4	9	3.27	5.93	4.22

\* Threshold limit = 3.95

Result: The threshold limit value obtained from the mean significance value column (3.95).

Conclusion: Among the six existing dimensions, the dimensions of social loafing, the disorder in rewards, and unintentional bias, compared to other dimensions, have a significance value lower than the threshold limit (3.95) and will be deleted; and the dimensions of ethical sensitivity, professional ethics, and intuition-based judgment, given their significance value is greater than the threshold limit, will be selected.

Table 6. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
<b>Audit institution characteristics</b>							
<b>Number of partners</b>	1	8	3	10	2.87	6.68	4.68
<b>Firm size</b>	1	8	5	10	2.89	7.22	5.88
<b>Goals and policies</b>	1	6	5	9	3.06	6.78	4.87
<b>Private or non-private</b>	1	7	5	9	3.48	7.41	6.10

\* Threshold limit = 5.38

Result: The threshold limit value obtained from the mean significance value column (5.38).

Conclusion: Among the four existing dimensions, the dimensions of several partners and goals and policies, compared to other dimensions, have a significance value lower than the threshold limit (5.38) and will be deleted; and the dimensions of firm size, and private or non-private firm, given their significance value is greater than the threshold limit, will be selected.

Table 7. Performance indicators based on the Fuzzy Delphi method

Dimensions	Pessimistic value		Optimistic value		Geometric value		Significance value
	Minimum	Maximum	Minimum	Maximum	$I_m^i$	$U_m^i$	
<b>Social</b>							
<b>Improvement of the knowledge level of information users</b>	1	6	2	8	2.99	5.68	3.58
<b>Professional reputation</b>	1	7	6	9	4.38	7.84	7.82
<b>Organizational culture</b>	1	7	6	9	3.87	7.15	7.35
<b>Transparency of auditor's responsibility</b>	1	9	4	9	3.04	6.44	6.54

\* Threshold limit = 6.32

Result: The threshold limit value obtained from the mean significance value column (6.32).

Conclusion: Among the four existing dimensions, the dimension of improvement of the knowledge level of information users, compared to other dimensions, have a significance value lower than the threshold limit (6.32) and will be deleted; and the dimensions of professional reputation, organizational culture, and transparency of auditor's responsibility, given their significance value being greater than the threshold limit, will be selected.

### Conclusion

The present study aims to identify the most effective factors of the emergence of conflict of interests by studying accounting literature and expert's consensus so that by introducing index variables, strategies to control these factors to reduce conflict of interests will provide in future researches. Some scholars also believe that in the current business conditions, technical and ethical problems are so intertwined that auditors need to have enough capacity to recognize ethical problems (Dickerson, 2009). In such conditions, even mere awareness of the issues proposed in the Code of Professional Conduct cannot be effective, because identification of occurrence or non-occurrence of a problem requires special abilities in practice (Campbell, 2005). Therefore, it is

necessary to study the ethical decision-making process of auditors. However, the review of the literature and previous studies in this area show that these studies have mostly focused on technical issues, and no sufficient attention has been paid to ethical issues in auditing. The recent decade corruption and scandals such as the Enron WorldCom events and the HP event in England in 2019 and the recent economic, banking, and privatization events in Iran have led auditors to be blamed for all these and have damaged the credibility of this profession. Regulation of laws, although healing, but has not been able to fully provide the factors needed to control this defect.

The major question is that, in spite of the inherent nature of misuse in economic activities in individuals which are rooted in greed, is it possible to, alongside laws and regulations and by using psychological theories, propose a model based on which we will be able to succeed in reducing conflict of interests in auditors' decision-making?

It seems that to answer this question, first, the important factors affecting conflict of interests must identify. Then the causes of the emergence of conflict of interests can be examined in the hidden angles arising from psychological issues; and with the help of theories of psychology and other sciences, a model may be found to control and mitigate conflict of interests in auditing to an acceptable extent, and this finding will provide the basis for future research. In this study, the factors affecting conflict of interests that were identified based on a study of research literature and interviews with experts were statistically analyzed by the Fuzzy Delphi method (screening).

The results showed that among 37 selected items, 18 ones of the sub-criteria could be in the acceptable range in terms of statistical logic including; Termination or conclusion of audit contract, Law orientation, Experience, Professional skepticism, Individualism versus collectivism, Uncertainty avoidance, Obedience pressure, Conformity pressure, Laws and regulations, Appliance corporate governance, Ethical sensitivity, Professional ethics, Intuition based judgment, Firm size, Private or non-private, Professional reputation, Organizational culture, and Transparency of the auditor's responsibility.

Among the seven categories, structural factors ranked higher than the other major factors. The results of this study in terms of the dimension of Termination or conclusion of audit contracts are consistent with the studies by Pierce (2007), Goto (2004), Clements et al.,(2012), Church, Jenkins, and Stanley(2015). In the dimensions of Law-orientation, Experience, and Professional skepticism, it is consistent with the studies by Saghafi et al.,

(2011), HassasYeganeh et al.,(2011), Khoshtinat, and Bostanian.,(2008), Asri and Bangun (2017). In the dimensions of Individualism versus collectivism, Uncertainty avoidance, Obedience pressure, and Conformity pressure, it is consistent with the studies by Hall, Lankfield and Smith (2005), BaniMahd, Nejati(2016), Nasution(2013) and Milgram(1974). In the dimensions of Laws and regulations and Application of corporate governance, it is consistent with the studies by Asri and Bangun(2017), Khoshtinat, and Bostanian, (2008), Saghafi et al.,(2011). In the dimensions of Ethical sensitivity, Professional ethics, and Intuition-based judgment, it is consistent with the studies by HassasYeganeh(2013), Guiral, Rodgers, Ruiz, and Gonzalo (2010), and Kaldoust et al.,(2018). In the dimensions of Firm size and whether it is private or non-private, it is consistent with the studies by Modarres et al.(2016), and Saghafi et al.,(2011).In dimensions of Professional reputation, Organizational culture, and Transparency of auditor's responsibility, it is consistent with the studies by BaniMahd, and Nejati(2016), Saghafi et al.,(2011), and Modarres et al.,(2016). It seems that the passage of time and the increase of researches and their results have led to changes in the introduction of new effective factors and the elimination of some previous sub-criteria.

The limitations of this study; The absence of female expert auditors, the *taboo nature of the questions related to conflict of interests, expert auditors'* being so busy with their job and lack of geographical coverage of all provinces in the country for interviewing with experts. Most importantly, academic research, due to the unusual volume and sometimes pointless master's theses, which are generally done as a task rather than as a scientific guide, still have not been able to find a suitable position among professionals in terms of affecting standards, procedures, and financial and control systems in the country.

### **Suggestion**

With the development of computers and financial software and the possibility of using smart tools, while the acceleration of transactions, fraud also has speeded up and at any time, new factors may affect conflict of interests. Therefore, continuous identification of the influential factors and use of psychological theories to propose a model to control and reduce conflict of interests seems very necessary given the development and promotion of statistical techniques to maintain the credibility of accounting position among users of accounting information. Also given the differences between cultures, it is suggested that future studies will match the factors affecting conflict of interests with the grouping of accounting models of Anglo-Saxon (pioneers of

this model are US, Britain, and the Netherlands).Continental (most European countries). South American model, mixed economy model (Eastern Europe and the former Soviet Union) and the newly-emerged international standard model (Nourvash, et al.2015).

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