



Develop a qualitative model of professional skepticism in auditing financial statements

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Submit: 27/06/2022 Accept: 18/10/2022

ABSTRACT

Professional skepticism is one of the main aspects of auditing that can lead to risky occasions for auditors. It is also one of the most delicate and controversial issues which is discussed in practice and standards of auditing. The purpose of this study is to identify and investigate the factors affecting professional skepticism and to develop a qualitative model of professional skepticism in auditing financial statements. In order to do so, among the qualitative research methods, the meta-synthesis method, which includes septet steps, has reviewed and analyzed 247 cases of previous research findings in recent years (from 1981 to 2021 and 1370 to 1400 solar calendar). After compositing the model, the opinions of 20 experts and professors have been collected by a questionnaire in 2021 in order to ensure the validity of the findings. Finally, the factors that have affected the most on professional skepticism were analyzed and categorized into 4 main categories and 16 axial codes. The CASP Critical Appraisal Skills Program was used to assess validity and the Kappa coefficient was used to assess reliability. The components had appropriate validity and reliability. Findings derived from the meta-combination steps show that four main factors were identified for the professional skepticism of auditing. These factors include: (1) individual factors, (2) environmental factors, (3) factors related to the auditee, and (4) factors related to the audit firm. Factors had appropriate validity and reliability. Finally, the research findings were ranked and provided in form of a qualitative model.

Keywords: Audit Professional skepticism, Meta-synthesis, Shannon entropy.



1. Introduction

Auditing has become a key and effective tool whose role is undeniable in the current challenging economy space, but over last two decades the position of auditing has declined internationally because there are several bankruptcies, such as Enron, Worldcom, and Sanbim, which bankruptcies had international dimensions. By analyzing these bankruptcies carefully, it becomes clear that the main origin of these economical lost derived from accounting and auditing (Ahmadi et al., 1398). Misstatements of financial statements due to fraud in listed companies of Tehran Stock Exchange and Iran Fara Bourse Co. (IFB) have resulted in capital market volatility and pecuniary loss for shareholders, and regulatory bodies such as Securities and Exchange Organization, The Central Bank of Iran (CBI) and Iranian Association of Certified Public Accountants have faced a serious challenge. This study can answer to the concerns of regulatory bodies about the inadequacy of auditors' professional skepticism about the identified distortions (Bolo et al., 1399).

According to International Standard 200, professional skepticism is a method that involves a questioning mind and critical appraisal of situations that may indicate possible distortions as a result of mistake or fraud, as well as a critical appraisal to audit evidence. The International Forum of Independent Audit Regulators has suggested that auditors with increasing professional skepticism can significantly improve auditing quality, and that institutions should prioritize their efforts in this area (Nolder and Kadous, 2018).

Professional skepticism is essential in all aspects of auditing, from planning and risk assessment to the critical appraisal of audit evidence in shaping the auditor's conclusions. That's why both researchers (e.g., Nelson) and legislators (e.g., PCAOB: Public Company Accounting Oversight Board) have always emphasized the importance of using an appropriate level of professional skepticism while auditing, because one of the reasons of auditing profession's failure in detecting and reporting fraud and financial crisis is stated in current literature as "lack of an appropriate level of professional skepticism" and ignoring the factors influencing it and as Beesly et al. (2013) stated in studying the causes of independent auditors' negligence detected fraud in US Securities and Exchange, among 81 cases in which auditors legal

action has been taken to auditors by US Securities and Exchange Commission, 60 Percentage of auditors' failures during 1998 to 2010 is due to using insufficient level of professional skepticism in auditing and professional skepticism is one of the three main reasons for these failures (Mehrani Et al., 1398).

Because auditing is a process that is always accompanied by professional skepticism, and this can be risky for auditors, as well as professional skepticism is one of the most delicate and controversial issues which is discussed in practice and in standards of auditing and it is one of the main aspects of auditing that has a two-way communication with other auditing subjects, so in a society that deals with the auditing profession, research on auditing subjects, especially professional skepticism is necessary. In this study, by studying and assessing the specialized theoretical concepts of auditing, new dimensions of professional skepticism are identified and they attempt to design a model for professional skepticism in financial statements. In terms of methodology, most of auditing research is empirical, review, archival and less attention is paid to qualitative research. In this study, we try to design a model for professional skepticism with a meta-synthesis qualitative method, which discusses the model at different levels and dimensions, and finally is examined and will be confirmed based on auditing experts point of view. According to this fact that the meta-synthesis qualitative method has rarely been used in auditing research, a qualitative method and a meta-synthesis tool have been selected for methodology in this research. The most important achievement of this research is to obtain a professional skepticism model of financial statements.

2. Literature Review

Professional skepticism is a fundamental concept in auditing that has been prominently demonstrated throughout auditing standards and academic literature. The vital importance of professional skepticism derives from this fact that this concept simultaneously affects both the costs and the quality of auditing process. Despite the great importance of this issue and the relatively high volume of studies that have been done in this field, still there is no obvious framework related to the definition, concept and practical and operational purpose of professional skepticism (Ahangari 1397). **According to Auditing Standard**

No. 200 of Iran, entitled "General Objectives of the Independent Auditor and Auditing in accordance with Auditing Standards", professional skepticism and audit risk are defined as follows: Clause 13: Professional skepticism, an attitude which involves a questioning mind (awareness of circumstances that can be a sign of fraud or mistake) and critical appraisal of audit evidence. Clause 15: The auditor should plan and audit with professional skepticism and be aware of any circumstances that may result in material misstatement of financial statements. Clause 16: It is necessary to consider professional skepticism at all stages of auditing. Clause 17: Professional skepticism is essential for the critical appraisal of audit evidence. Professional skepticism includes the critical appraisal of evidence and the reliability of documents and the results of inquiries and other information obtained from executive managers and the governing bodies of business unit.

The auditor's professional skepticism also includes assessing the adequacy and appropriateness of the audit evidence obtained from existing circumstances. For example, in cases where there are risk factors for fraud and evidence that is inherently vulnerable to fraud, only the evidences support a significant amount in financial statements. The auditor may accept the documents as valid documents unless proved otherwise. However, the auditor should consider the reliability of information used as audit evidence. Audit standards in cases where there is skepticism about the reliability of information or existing signs of fraud (for example, if circumstances arise during auditing which convince the auditor that a document may not be valid or its contents may be distorted) bind him to conduct further investigations and make necessary adjustments to the anticipated auditing procedures or to design and implement other audit procedures to resolve the problem. The auditor should closely monitor the auditee and management behaviors. Achieve sufficient knowledge of the under study industry and do not judge without investigation (Griffith et al., 2012; Rose, 2007). **Skepticism has six characteristics as follows:**

Questioning Mind: Professional skepticism requires a constant questioning, whether obtained information and evidence indicate false statements derived from fraud. **Delay in Judgment:** The auditor should be open-minded until he has gathered sufficient evidence. One should not be convinced with evidence that is less convincing. Delay in judgment indicates

that judgments are made slowly in a suspicious case. Because making judgments requires consideration and gathering additional supporting information. **Search for knowledge:** it is the same as curiosity. Which means the auditor has a curious mindset with an interest to seek evidence. **Interpersonal Understanding:** The auditor should be passionate about human attitudes, intentions, and behaviors. Interpersonal understanding is one of the characteristics of professional skepticism that requires understanding the reason or motives why the employer behaves in a certain way. **Self-confidence:** Self-confidence means we are professionally confident enough to be able to claim that our judgment is based on the evidence that has been gathered. **Self-opinionated:** The auditor makes decision courageously to evaluate, present, and consistently auditing statements. Self-opinionated means the conclusions of individuals have been made by considering the adequacy of evidence (Ghasemi Nejad et al., 1400).

Professional skepticism arises from the auditor's judgment and is identified by skeptical behavior and affects the auditor's performance. Professional skepticism affects the initial planning of auditing and planning affects the type of evidence, and therefore professional skepticism also affects the auditor's statements. **The determinants of professional skepticism in auditing performance include:** evidence of input and output, skeptical action and judgment, motivations, characteristics, knowledge, training, and auditing experience. The relationship of the above components is such that output evidence affects audit training and experience, and audit training and experience affects input evidence. Skeptical judgment and action are also affected by input evidence and also affect output evidence. All of these are influenced by the auditor's motivations, characteristics and knowledge. These relationships indicate that professional skeptical is influenced by many factors (Royaei and Mohammadi, 2015).

Professional skepticism is one of the most important audit priorities that should be considered at all stages of auditing. The human mind is so that it becomes more active when it doubts something. Therefore, auditors should always consider professional skepticism at the stage of planning auditing, gathering evidence, and commenting. This is

also important for auditors while assessing audit risk (Agustin, 2020; Hamshari et al., 2021).

Research background

Foreign researches

Hamshari et al. (2021) conducted a study on the relationship between professional skepticism and audit risk and internal control and the detection of mistakes and fraud in the Jordanian financial statements. The findings showed that professional skepticism leads to detect more mistakes and frauds. Agustin (2020) conducted a study entitled Professional Skepticism and The Ability of Auditor to Assess Audit Risk. Findings showed that professional skepticism affects the appropriate assessment of audit risk. Rodgers et al. (2017) showed in their study entitled The Impact of Knowledge Transfer on Professional Skepticism that knowledge transfer plays an important role in improving professional skepticism as well as planning the auditors' auditing process and leading the auditor's judgments to accuracy and authenticity. Knowledge transfer and work experience were also identified as two important factors affecting professional skepticism. Arumega et al. (2016) conducted a study entitled The Influence of Ethics, Experience and Competency Toward the Quality of Auditing with Professional Auditor Skepticism as a Moderating Variable. Ethics affects the quality of auditing results by professional skepticism as a moderating variable. Finally, auditing ethics, experience and skills were identified as factors influencing professional skepticism. Alwee Hussnie et al. (2015) conducted a study entitled Evaluation of Indicators and Factors Related to Professional Skepticism in Malaysia. After the analysis, it was concluded that except delay in judgment, five other indicators are applicable in the audit environment of Malaysia. The results showed that the type of culture in each country is the most important factor influencing the auditor's professional skepticism. Coppage & Shastri (2014) had a study entitled " Effectively Applying Professional Skepticism to improve Audit Quality." The ethical characteristics of the auditor, the auditor's experience, the auditor's professional and academic qualifications, and the auditor's motivation affect professional skepticism. On the other hand, auditing standards and rules in the country about auditor responsibilities affect professional skepticism as external factors. Hurt

et al. (2013) showed the need for future research about professional skepticism by considering the impact of experience and time budget pressure on auditors' professional skepticism in a study entitled " Research on Auditors' Professional Skepticism: Opportunities and Analysis for Future Research". His model is an extended model of Nelson (2009) model in which influential factors and prerequisites of professional skepticism (i.e. auditor characteristics, knowledge, ability and motivation) have been replaced by more extensive classifications such as auditor, evidence, client, and external environment characteristics. Therefore, the characteristics of the auditor include the auditor's behavioral and ethical characteristics, the auditor's experience, the auditor's professional and academic competence, the auditor's motivation, and the validity or otherwise of the evidence of the auditee and the external environment were identified as three important factors affecting Professional skepticism. Nelson (2009) conducted a study entitled A Model and Literature Review of Professional Skepticism in Auditing, which provided a summarized model for professional skepticism. A distinction between skepticism judgment and skepticism action is considered in the center of his model. Input evidence (including information collected and considered in auditing process) is also an important part of the judgment process in his model. In the other part of the model, the judgment process is influenced by the knowledge factor and it means the auditor's awareness and knowledge about the limitations created by accounting and auditing standards. Also other non-scientific components, which are intelligence, the degree of skepticism of auditor, the level of his confidence; and the auditor's motives have been introduced as other factors affecting skepticism. Therefore, the characteristics of auditor including the auditor's behavioral and ethical characteristics, the auditor's experience, and professional competencies were identified as two important factors affecting professional skepticism.

Iranian's research

Ghasemi Nejad et al. (2021) conducted a study as The Effect of Behavioral Characteristics of Being Opportunistic on the Independent Professional Skepticism of Auditors, which was assessed the theory of personality psychology. Findings show that behavioral characteristics of being opportunistic have

negative and meaningful relationship with the professional skepticism of independent auditors and its components including questioning mind, delay in judgment, search for knowledge, interpersonal understanding, self-confidence and Self-opinionated. Abedini Naeini (2020) conducted a study entitled "Developing a Framework to Measure the Professional Skepticism of Auditors Using Multi-criteria Decision-making Methods." The results show that the index of analytical and decision-making power, auditing and trusteeship history were identified as the most important criteria and personal oversight, increasing stakeholder awareness and power-seeking were recognized as the least important criteria. Rahnamania (2020) conducted a study as The Effect of Social Adjustment on The Auditor's Professional Skepticism with The Moderating Effect of postgraduate education and work experience. The results of assessing the hypotheses showed that social adjustment has a positive effect on professional skepticism and the auditor's postgraduate education and work experience have a moderating role in this effect. Birjandi et al. (2019) conducted a study entitled The Study of the Effect of Professional Ethics on The Auditor's Professional Skepticism. The results showed that five components of professional ethics have a positive and significant effect on the professional skepticism of auditor; but the greatest impact is related to the component of professional competence and care. Kargozar et al. (2019) conducted a study entitled "Studying The Relationship Between Temperament and Professional Skepticism of Auditors". Overall, the findings showed a significant relationship between participants' temperament and their level of professional skepticism. So that people with hot and dry temperaments had more professional skepticism and people with cold and wet temperaments had less professional skepticism. Mehrani et al. (2019) conducted a study entitled Designing a Professional Audit Skepticism Model Based on Grounded Theory. The most important result of this research can be considered as achieving a paradigm model of auditor's professional skepticism and the components of paradigm model extracted from the present study include 25 categories, 80 concepts of relative integrity and comprehensiveness. According to the research findings, having "suspicion-based skepticism" as the core of professional skepticism in auditing is the most important finding. Valian and Safari (2018) conducted

a study entitled Providing a Model for Understanding the Professional Skepticism of Auditors with a Content Analysis Approach. According to the results of this research in the qualitative dimension, four main components and 13 sub-components were determined as the components of intended model. In the quantitative part, the results of regression model test showed that psychological characteristics, personality characteristics, professional skills and environmental factors have a positive and meaningful effect on the professional skepticism of auditors. Gholamrezaei and Hassani (2017) conducted a study entitled The Role of Mindset, Ethical Values and Behavioral Deviations in Auditors' Professional Skepticism. The results show that as thinking phase becomes longer, the auditors' level of professional skepticism increases; Also, as the level of ethical values among auditors increases and their behavioral deviations decrease, their level of professional skepticism increases. Valian et al. (2017) conducted a study entitled Designing an Interpretive-Structural Analysis Model for Factors Affecting Auditors' Professional Skepticism. Based on the designed model, the results show that the most important factors of professional skepticism are auditor neutrality, adherence to auditing standards, adherence to auditing skills and adherence to the rules and regulations of stock exchange trading which were indicators of the auditor's independence and expertise in Delphi results. Also, at the highest level and in fact the least effective factor on auditors' professional skepticism, the dimension of authority explanation is one of the indicators of responsibility as a psychological characteristic. Tahriri and Piri Saqerloo (2016) conducted a study entitled Auditors' Perception on the Concept of Professional Skepticism in Auditing. The results indicate that auditors with different characteristics have different perceptions on the fundamental and key concept of professional skepticism, and this can be a challenge for auditing profession and requires more attention in the field of training and standardization. Hosseini et al. (2015) conducted a study entitled Explaining the Components Affecting Auditors' Professional Skepticism Based on Individual Dimensions. The results on the effect of search for knowledge, self-confidence and interpersonal understanding on auditing professional skepticism support research hypotheses and other factors do not explain professional skepticism.

Research methodology

This research is an applied research in terms of purpose. The research methodology is a qualitative method and a **Meta-Synthesis** tool. A meta-study is an in-depth analysis of research work done in a specific field. The meta-study is different from terms such as meta-analysis, meta-synthesis, meta-theory, and meta-method. The meta-study includes all of these concepts. Meta-study is known as meta-synthesis if it is worked as qualitative one on the concepts used in previous studies. In fact, meta-synthesis is the composition, analysis and interpretation of the main findings of previous research (Dayanti Dilmi, Zahra., 2018). To identify the factors affecting professional skepticism, the meta-synthesis method has been used, which is an appropriate way to obtain a comprehensive combination of this issue based on the findings of Iranian and foreign articles. In this research, the seven-step model of Sandlowski and Barso (2007) is used to design the model, which includes the following steps:

Step 1: Setting up a research question is the first step in setting up research questions.

Table 1: Research questions to start the meta-synthesis method

Component	meta-synthesis qualitative research questions
Research Objective (What)	Identifying the elements, dimensions and indicators related to professional skepticism and designing the professional skepticism model
Previously studied sources by various researchers (Who)	All books, dissertations and articles published in various reputable Iranian and foreign scientific journals that have paid attention to the factors affecting professional skepticism.
How to conduct research (How)	Reviewing sources, identification and prioritization of effective factors and indicators, analyzing and classifying identified concepts and indicators
Research time frame (When)	All existing and available articles between 1981 and 2021 - All available articles in Iran from 1991 to 2021

According to the table above, **research questions** include:

- 1) What are the components affecting auditors' professional skepticism?
- 2) What is the qualitative model of professional skepticism of financial statements?

Step 2: Systematic search of texts, in this step, the researcher systematically searches for articles published in various and valid Iranian and foreign scientific journals and using related keywords. Selecting the keywords for search first take place in general and then more detailed. In order to do so, the words of following table were examined individually or in combination in Persian and English, and finally 116 English articles and 131 Persian articles were found.

Step 3: Search and select appropriate texts, in this step, the researcher, after studying and filtering scientific research articles several times, considers various parameters such as title, abstract, content, details of the article (author name, year) and ... removes articles that is not appropriate for the research question and purpose and are not considered in the meta-Synthesis process.

Step 4: extracting the information of texts, the researcher has studied selected and finalized articles several times in order to obtain the findings in the separate contents in which the main and primary studies were conducted. From sites: The Scientific Information of The Academic Center for Education, Culture and Research Database (<https://www.sid.ir/fa/journal/>), Institute for Humanities and Cultural Studies (<http://ensani.ir/fa>), Noor Specialized Magazines (Noormags) (<https://www.noormags.ir/>), Publisher of Iranian Journals and Conference Proceedings (Specialized Publisher of Iranian Conferences) (<https://civilica.com/>), Elmnet Scientific Information Database (<https://elmnet.ir>), Iranian Research Institute for Information Science and Technology (IranDoc) (<https://ganj.irandoc.ac.ir>), and Journal of Accounting and Auditing Studies 131 articles were found, of which 61 were rejected due to their titles, 22 were rejected by studying their abstracts, and 9 were rejected by studying the text of research. Finally, 39 sources were considered to identify the factors affecting professional skepticism in auditing. The final articles were also selected based on found references (author's name and surname, year, article name) to implement the next steps of the meta-synthesis approach. In relevant tables, CASP is used to determine the validity of research tools that are studied articles and texts. By using the CASP method with 10

qualitative conditions, each article should be evaluated in terms of quality. A score between 1 and 5 is assigned to each of the articles based on each of these

conditions. The articles with a total score of 25 and upper will be confirmed in terms of quality and the rest of the articles will be deleted.

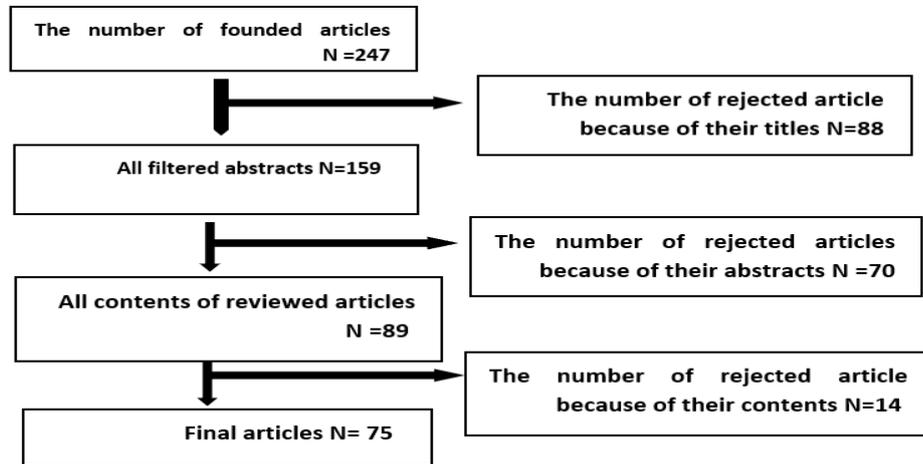


Figure 1: The process and the number of sources reviewed in meta-synthesis (researcher's findings)

Table 2: the components of professional skepticism in Persian articles along with CASP scoring

Title	Author (year)	Identified factors	CASP score
The effect of opportunistic behavior on the professional skepticism of independent auditors: a test of personality psychology theory	Ghasmi Nejad et al. (2021)	Behavioral characteristics, moralism, regulatory rules	40
Professional socialization and professional skepticism in auditing: A test of social identity theory	Shirzad et al. (2020)	Socialization	30
developing the professional skepticism evaluation framework of certified auditors using multi-criteria decision-making methods (case study: official auditors of Justice Administration of Kerman province)	Abedini Naeini (2020)	Analysis and decision-making power index, Audit history, trustworthiness Personal supervision of affairs Increase of beneficiaries and power seeking	50
Studying the impact of auditor's professional skepticism on assessing fraud risk, considering the interfering effect of communication skills and social undermining.	Hosseini et al. (2020)	Social undermining, social support, experience, skill and knowledge of auditors, behavioral characteristics	30
The role of auditors' narcissistic personality on their professional skepticism	Mafi Balaei (2020)	Morality, individual characteristics, characteristics including authority, ostentation, dominance, exploitation, entitlement, sufficiency and egoism	30
The effect of gender, education and conspiracy mentality on auditor's professional skepticism: a test of attitude theory	Ghasmi Nejad et al. (2020)	Gender, education and behavioral characteristics	40
The role of contingent risk-taking in managers' decisions in relation to organizational skepticism and professional skepticism in auditing firms.	Naji (2020)	contingent risk-taking in managers' decisions	29
The effect of social adjustment on the auditor's professional skepticism with the moderating effect of postgraduate education and work experience	Rahnamania (2020)	postgraduate education of auditor, social adjustment, work experience	45
studying the effect of professional ethics on the auditor's professional skepticism	Birjandi et al. (2020)	Professional ethics, professional principles and regulations, independence and impartiality, confidentiality, integrity and honesty and competence, professional care.	40
The impact of auditor quality on auditing quality with the mediating role of professional skepticism	Abdolrahimi (2018)	auditor quality	35

Title	Author (year)	Identified factors	CASP score
The effect of personality disturbance on professional skepticism of independent auditors	Gholamrezae& Hasani (2019)	personality disturbance, individual characteristics	35
Studying the effect of auditor's partner's perceived support on attitudes based on neutrality and skepticism in professional skepticism and auditor's behavioral consequences.	Bameri et al. (2019)	Auditing planning Auditing methods	28
Studying the relationship between auditors' temperament and professional skepticism	Kargozar et al. (2019)	The type of individual's temperament	29
The effect of goal orientation and self-efficacy on auditor's professional skepticism	Hosseini Khomak (2018)	Managerial style of auditing firm, individual characteristics	28
The role of auditor's personality on auditing quality using the mediating component of professional skepticism	Moghimi Kandeloosi (2019)	Personality characteristics of auditor	30
Studying the effect of auditor's work quality on his/her professional skepticism and its relationship with the quality of auditing	Sorkhan Beigipour (2019)	Among the auditor's quality dimensions, the auditor's experience dimension had the greatest impact on professional skepticism in the auditor's work and was in the first place. Then competence, commitment, independence and ethics of auditor are in the next levels	35
Designing the audit professional skepticism model based on grounded theory	Mehrani et al. (2020)	Independence and impartiality, auditing and transactions complexities, auditor's personal characteristics, audit evidence characteristics, auditing firm's characteristics, employer's motivations, auditor's business risk, audit risk, information asymmetry, judgmental nature of auditing , using alternative solutions, validation of evidence, planning and adjustment of investigation programs, composition of auditing team, supervision and monitoring the work, knowing employer, society culture, external audit environment, social responsibility of auditor, public interests of society, characteristics of Employers, events during the auditing	50
Thinking styles and professional skepticism in auditing (testing Theory of Mental Self-Government)	Heidar & Nikoomaram (2018)	Thinking style	28
The effect of organizational and professional identity on the professional skepticism of independent auditor	Rezaei et al. (2018)	Organizational commitment and professional commitment	45
Providing a model for understanding the professional skepticism of auditors with content analysis approach	Valiant \$ Safari Gerayeli (2018)	Independence and impartiality	40
Studying the effect of audit management by managers to detect distortions by auditors in terms of the auditor's professional skepticism	Safipour Afshar et al. (2018)	Characteristics of managers	29
The relationship between ethics, experience and professional competence of auditors with audit quality (according to the moderating role of professional skepticism)	Daryaei & Azizi (2018)	Ethics, experience, professional competence	30
Comparison of professional skepticism, risk taking and professional competence among male and female auditors	Nazari (2018)	Gender	30
studying the relationship between the auditor's temperament and professional skepticism in auditing	Kargozar (2018)	Hot temper or cold temper	30
The effect of knowledge transfer on the skepticism of auditing profession	Bahrami (2018)	knowledge transfer	40
Identifying the factors affecting the professional skepticism of auditors of financial tribunal	Eshrestaghi (2017)	auditors experience, auditors level of education, organizational level and gender of auditors	45
The effect of ethics, experience and competence on auditing quality considering the moderating role of professional skepticism from the perspective of	Khajevand Jafari (2017)	Ethics, experience and qualifications, conditions of participation in the studying course, type of industry	35

Title	Author (year)	Identified factors	CASP score
senior auditors of auditing institutions			
The relationship between five-factor characteristics and auditors' professional skepticism	Azizzadeh Haroozi (2017)	Personality characteristics include: extroversion, adaptability, openness and acceptance of experience and responsibility	30
The relationship between auditors' personality characteristics and professional skepticism	Azizzadeh Haroozi (2017)	Individual characteristics	30
The role of thinking styles, moral values and behavioral deviations in the level of professional skepticism of auditors	Gholamrezaei &Hasani (2019)	Thinking style and moral values	45
Studying the effect of ethics, experience and professional competence of auditors on the quality of auditing, considering the moderating role of professional skepticism.	Azizi (2017)	Ethics, experience and professional competence of auditors	35
Designing an Interpretive-Structural Analysis (ISM) model of factors affecting auditors' professional skepticism	Valian et al. (2018)	Independence and impartiality	50
Auditors' understanding of the concept of professional skepticism in auditing work	Tahriry et al (2016)	work experience and professional knowledge and skills, audit level, gender, professional competence and membership of the certified accountants society, field of study, education level, gender, internal control system of studying unit, auditor's knowledge of the industry, Independence of auditor, good reputation of audited entity, rulesuits against audited entity, audit time pressure, audit fees, possibility of rulesuits against auditor.	20
Studying the relationship between two dimensions of skepticism and neutrality of professional skepticism with auditor's professional judgment	Rajabalizadeh et al. (2015)	Internal controls of the investigated unit and audit standards	27
Explaining the factors affecting the professional skepticism of auditors by relying on individual dimensions	Hosseini et al. (2015)	Search for Knowledge, self-confidence, interpersonal understanding, audit firm ownership, respondents' age and their employing period.	48
Studying the effect of employer's confidence about using of professional skepticism in the auditor's judgment	Mahmoudian (2012)	Characteristics of managers of the investigated unit and internal controls	30
Analyzing the auditors' point of view according to the factors affecting their trust in the management of employer and the documents provided by her/him	Zafarzadeh (2017)	Age, work experience, gender, marital status, the organizational rank of auditor and the size of audit firm, the management ability of owner, the management reputation of the owner, the accountability of management, the religious beliefs of the management, the observance of ethical norms by management, the benevolence of the management. The internal control system of owner company, the capital structure of owner company, the profitability of owner company and the auditing records of owner company, as well as other issues including the existing unusual pressures on the activity and manager of owner company, the high risk of type and field of activity of owner company, existing ambiguity especially in association with continuation of the activity of owner company, there is a commonality and relation between the management of owner and auditor	35

The average CASP score of 39 Persian articles is 35.53, which indicates high validity of the research tools (31 to 40). The scores of articles ranged from 27 to 50. In other words, the lowest score of articles was

27 and the highest score was 50. I did not consider the table of Iranian articles.

English sources studied professional skepticism

116 articles were found after controlling different sites (Elsevier, Science Direct, Emerald, ProQuest, Research Gate, Google) 27 articles were rejected due to their title, 48 articles were rejected by studying the abstract, and 5 articles were rejected by studying the text of research and finally 36 articles were accepted as follows.

The average score of CASP of 36 articles is 36.91, which indicates high validity of research tools (31 to 40). The average validity of all 75 English and Persian sources is 36.22, which indicates high validity of research tools (31 to 40).

Step 5: Step 5 is the analysis and synthesis of qualitative research findings in meta-synthesis method. During the analysis, subjects or themes are searched that have become stable among the studies included in meta-synthesis. Sandelowski and Barroso entitle this method "thematic study". In this method, first the researcher considers all factors extracted from studies as codes, and then he categorizes them in a similar concept by considering the meaning of each of these codes (Dianati, 2018).

In this research, first all factors extracted from articles are considered as codes and then they are categorized in a similar concept by considering the concept of each of the codes which are briefly shown in table 5.

Table 3: Professional skepticism components of English articles with CASP scoring

Title	Author (year)	Identified factors	CASP score
The Relationship of Professional Skepticism to the Risks of Auditing and Internal Control, and the Discovery of Fraud and Core Errors in the Financial Statements in Jordan	Hamshari et al. (2021)	Components of audit risk	45
Research Insights- Auditor Professional Skepticism Part II: Mindset, Prompts and Environment and Contextual Factors	Brazel and Schaefer (2019)	Components of audit risk	45
The effect of auditor quality to professional skepticism and its relationship to audit quality	Kusumawati A Syamsuddin (2018)	Auditor quality	47
Grounding the professional skepticism construct in mindset and attitude theory: A way forward	Nolder and Kadous (2018)	Behavioral characteristics, social characteristics	45
Knowledge management: The effect of knowledge transfer on professional skepticism in audit engagement planning	Rodgers et al. (2017)	knowledge transfer and work experience	40
Neutral and presumptive doubt perspectives of professional skepticism and auditor job outcomes	Cohen et al. (2017)	The type of auditor's perspective	35
Auditor skepticism and financial crises: The Nigerian factor	Out and Elias (2017)	Behavioral characteristics, social characteristics	30
The Influence of Ethics, experience and competency toward the quality of auditing with professional auditor skepticism as a Moderating Variable	Arumega et al (2016)	Ethics, experience and auditing skills	45
The Influence of Information Order Effects and Trait Professional Skepticism on Auditors' Belief Revisions	Yankova (2015)	The information systems of considering company	40
Re-Validation of Professional Skepticism Traits	Alwee Hussnie et al (2015)	Culture in every country	32
Effectively Applying Professional Skepticism to improve Audit Quality. The Meaning of Professional Skepticism	Coppage & Shastri (2014)	The auditor's ethical characteristics, the auditor's experience, the auditor's professional and academic competence and the auditor's motivation on the professional Skepticism of auditing standards and the existing rules in the country in association with auditor's	35

Title	Author (year)	Identified factors	CASP score
		responsibilities as external factors of corporate governance characteristics of the unit under consideration. Including the internal control system of the company, the characteristics of the board of directors and the audit committee, and the available documents	
Research On Auditor Professional Skepticism – Literature Synthesis and Opportunities for Future Research	Hurt (2013)	The auditor's characteristics include the auditor's behavioral and ethical characteristics, the auditor's experience, the auditor's professional and academic competence and the auditor's motivation, and the validity or invalidity of the evidence of unit under consideration and the external environment.	50
Enhancing Auditor Professional Skepticism	Glover (2013)	Audit risk, judgmental nature of auditing, independence and impartiality, reducing audit risk	45
Auditor Objectivity and Skepticism – What's Next?	Franzel (2013)	Audit risk, audit risk mitigation, audit team composition, evidence validation	45
Inducing Professional Cognitive Dissonance to Increase Auditors Professional Skepticism	Mocadlo (2012)	training audit institute	30
The Effects of Auditor Rotation, Professional Skepticism, and Interactions with Managers on Audit Quality	Bowlin et al. (2012)	Auditor rotation	30
An Experimental Investigation of Delayed Persuasion During Analytical Procedures: Are Auditors Susceptible to the Sleeper Effect?	Brewester (2012)	Understanding the complexity of work of the unit considered by auditor	35
Auditing Complex Estimates: Understanding the Process Used and Problems Encountered	Griffith et al. (2012)	The behavior of managers	30
Professional Skepticism: The Effects of a Partner's Influence and the Level of Fraud Indicators on Auditors' Fraud Judgments and Actions	Carpenter & Reimers (2012)	The opinion of auditing institution about considered unit Management style of auditors	30
Training Auditors to Think Skeptically	Plumlee et al. (2012)	Training auditors	30
The Role of Professional Skepticism, Attitudes and Emotions on Auditor's Judgments	Nolder (2012)	Auditor's feelings	30
Effects of ethical context and Machiavellianism on attitudes toward earnings management in china	Shafer & Wang (2011)	Behavioral characteristics	30
The Role of Personality and Motivation in Professional Skepticism When Tone at the Top Varies	Rosman (2011)	Introverted and extroverted personality, the degree of support from the director of auditing firm, the management style of audit directors	35
Encouraging Professional Skepticism in the Industry Specialization Era	Grenier (2011)	Auditor's experience, auditor's knowledge about the industry	35
The effect of benchmarked performance measures and strategic analysis on auditors' risk assessments and mental models	Knechel (2010)	Auditor intelligence	35
Development of A Scale to Measure Professional Skepticism	Hurt (2010)	Planning and adjustment of auditing programs, validation of evidence, using alternative solutions, planning and adjustment of auditing programs, validation of evidence	45
Professional skepticism of auditors: across cultural experiment.	Endrawes & Monroe (2010)	Society's culture, the value of respect for auditors in society	35
The effects of ingratiation and client incentive on	Robertson (2010)	Managers' relationship, auditor's experience	40

Title	Author (year)	Identified factors	CASP score
auditor judgment			
The development and validation of a new Machiavellianism scale	Dahling et al. (2010)	Self-interest and selfishness	35
The effect of documentation structure and task specific experience on auditors' ability to identify control weaknesses	Agoglia et al. (2009)	Auditor experience	30
A model and literature review of professional skepticism in auditing	Nelson (2009)	The auditor's characteristics including the auditor's behavioral and moral characteristics, the auditor's experience, the auditor's professional and academic competence, the auditor's motivation, and the validity or invalidity of the evidence of unit under consideration.	45
Aggressive Financial Attention to Evidence of Reporting and Intentional Misstatement Judgments: Effects of Experience and Trus	Rose (2009)	Industry-specific auditing experience	35
The Influence of Skepticism and Previous Experience Auditor Judgments on	Popova (2006)	Previous audit work experience	30
Auditor acceptance of dysfunctional audit behavior: An explanatory model using auditors' personal characteristics	Donnelly et al. (2003)	Behavioral characteristics, auditing program	30
Experimental investigation of ethical standards and perceived probability of audit on intentional noncompliance	Ghosh & Crain (1996)	Individual characteristics, work discipline	35
Anchoring and adjustment in probabilistic inference in auditing	Joyce & Biddle (1981)	Auditing experience and skills, behavioral characteristics	40

table 4: Coding factors affecting professional Skepticism

Factors affecting professional Skepticism	Axial coding	Secondary factors	open coding
Individual characteristics	C1	Professional competence	C01
	C1	Behavioral characteristics	C02
	C1	Gender	C03
	C1	Temperament	C04
Characteristics of considering unit	C2	Corporate governance	C05
	C2	Auditing risk	C06
	C2	Characteristics of managers	C07
	C2	Industry or service characteristics	C08
Characteristics of auditing firm	C3	management style	C09
	C3	planning of auditing	C10
	C3	The size of the institution	C11
	C3	Education	C12
	C3	Independence	C13
Environmental factors	C4	Economic conditions	C14
	C4	Rules and standards	C15
	C4	society culture	C16

Step 6: quality control and content analysis: credibility means concepts such as defensibility, believability, verifiability and even reflectivity of research results in a qualitative research. In this research, it is necessary to prove whether the conducted research is reliable and valid. The validity of the questionnaire of this research is done through Shannon Entropy method in such a way that the results and findings of the research are provided to the masters of this field to study and comment, and the point of their views and modifications will be applied. In this case, it can be stated that the questionnaire has appropriate validity. For this research, 20 experts familiar with specialized auditing topics were used, and the characteristics of respondents are described in the following table to determine the importance of each of the components of professional skepticism:

Table 5: Characteristics of respondents

Respondent characteristic	Number
Certified auditor	7
Auditor	11
Auditing professor	2
Total	20

Cohen's kappa coefficient (kappa index) is used to determine the reliability of components affecting professional skepticism which have been coded. If the value of this coefficient is upper than 0.6, it is reliable. In the following, first the coding table of two evaluators and then Table of Kappa coefficient calculations for the components of professional skepticism are provided.

Table 6: Coding of two evaluators

codes	Secondary factors	Encoder1	Encoder2
C01	Professional competence	1	1
C02	Behavioral characteristics	1	1
C03	Gender	1	1
C04	Temperament	1	1
C05	Corporate governance	2	2
C06	Auditing risk	2	3
C07	Characteristics of managers	2	2
C08	Industry or service characteristics	2	2
C09	management style	3	3
C10	planning of auditing	3	3
C11	The size of the institution	3	3
C12	Education	3	3
C13	Independence	3	3
C14	Economic conditions	4	4
C15	Rules and standards	4	4
C16	society culture	4	4

Table 7: Kappa coefficient calculations for the components of professional skepticism

Cross-table		Encoder 2							
		not selected	Category 1	Category 2	Category 3	Category 4	Total	Dividing sum by total	Multiply the corresponding lines
Encoder1		0	0	0	0	0	0	0	0
	Category 1	0	4	0	0	0	4	0.250	0.063
	Category 2	0	0	3	1	0	4	0.250	0.047
	Category 3	0	0	0	5	0	5	0.313	0.117
	Category 4	0	0	0	0	3	3	0.188	0.035
	total	0	4	3	6	3	16		0.262
	Dividing sum by total	0.000	0.250	0.188	0.375	0.188	kappa = Pi = (PAo – PAE) / (1 – PAE)		
PAo	Value of agreement between two evaluators	0.938							
PAe	Expected value of agreement	0.262							
Pi	Kappa coefficient	0.915							

According to the Kappa coefficient which is upper than 0.6, the components of professional skepticism model have the required reliability.

Step 7: Providing the findings, in this stage of meta-synthesis, the findings obtained from previous steps show that four main factors were identified for professional skepticism. These factors are: (1) individual factors, (2) environmental factors, (3) factors related to the considered unit and (4) factors related to the auditing firm. In the following, Shannon Entropy method is provided which performs data processing in terms of content analysis. In entropy method, the greater the value of an index, the more important that index is. To rank the components of professional skepticism using Shannon Entropy, they ask to score in the form of numbers 1 to 20 to assess the importance and rank each factor. The responses of 20 relevant experts are entered to an Excel spreadsheet, then the responses are normalized. In order to normalize, the score of each factor is divided by the sum of the numbers of that factor and the corresponding rank *w* is obtained. In table 8, the rank of each factor is presented.

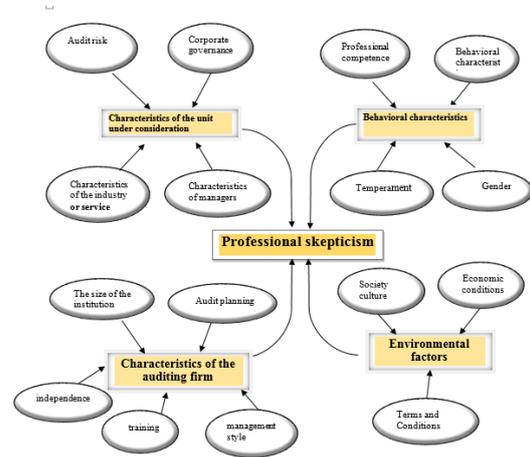
Table 7: Ranking the main factors of professional skepticism by Shannon entropy method

	Individual characteristics	characteristics of considered unit	characteristics of auditing firm	environmental factors	
E _j	8.8022	8.9483	8.9658	8.7937	35.5099
W _i	0.2479	0.2520	0.2525	0.2476	

As results show, there are four factors affecting professional skepticism, the characteristics of auditing firm have the most impact on professional skepticism and it is in the first place, the reason is that professional skepticism originates from auditor's mind in the first step. The auditing firm affects its auditor by its policies and approaches. In the second place, the characteristics of considered unit affects professional skepticism, and this issue is also due to this fact that the weakness and strength of internal controls and other related matters are originated from considered unit, and these items affect the attitude of auditors. Individual characteristics are in the third place and

environmental factors are the last one. In the following, each of these cases will be explained.

Therefore, the final model of professional skepticism is provided as follows:



5. conclusion

The **purpose** of this research is to study the theoretical concepts of auditing in order to achieve a professional skepticism model in auditing using a meta-synthesis approach. The special nature of this research methodology and using meta-synthesis qualitative strategy in order to develop the model and validate professional skepticism model is a new affair in the researches of this field, which has been paid less attention in the past and is the most important difference between this research and the previous ones. In qualitative research concepts and categories that have been paid less attention before they are identified, and each of them can be a topic for further research, in addition to this fact that the subject under studying is discussed carefully. The **final model** provided in order to use in the field of auditing, estimation of professional skepticism in the auditing of financial statements by auditing organization (merging rules and regulations in association with professional skepticism), the community of certified accountants (quality control and monitoring auditors' work), auditing institutions that are members of the society of certified accountants of Iran and auditors should be used in practice. In order to do so, 75 Iranian and foreign articles were studied in order to identify the factors affecting the professional skepticism of

auditors. The evidence obtained from this research, the opinions of experts and professors support this claim that indicators such as **individual characteristics, characteristics of considered unit, the characteristics of auditing firm, rules and regulations and standards** have affect professional skepticism the most.

The characteristics of auditing firm include: firm size, auditing plans, independence, training, and management style. Professional skepticism originates from the auditor's mind in the first place, the auditing firm effects auditor's mind with its policies and methods. According to the characteristics of auditing firm, many factors affect the professional skepticism of auditors. As findings show, the size of firm is the most important factor, which is because the size of a firm affects the professional methods and power of employees and their professional skepticism. Also, it is auditing planning and independence that affects professional skepticism, because the degree of independence will increase the auditor's motivation to find more distortions. Management style due to its effect on company's approach, auditing planning due to using appropriate auditing methods and training are the components of auditing firm which affect professional skepticism. Large auditing firms that have an efficient management style, design strong internal controls and will definitely use more powerful financial software, and will also pay more attention to training and planning for their employers, these things result in accomplishing appropriate auditing by an independent auditor with professional skepticism, which will ultimately result in right judgment and high quality auditing. The **characteristics of considered unit** include: corporate governance, industry or service characteristics, managers' characteristics, and audit risk. It affects professional skepticism, which is also due to this fact that the weakness and strength of internal controls and other related issues are originated from considered unit, and these issues affects the attitude of auditors. **Individual characteristics** include: professional competence, behavioral characteristics, temperament and gender. The more capable auditor is the more accurate auditing work will be. Then, the behavioral characteristics are important, the reason is that auditors' behavior affects the type of auditors' auditing. For example, auditors who are more accurate use more professional skepticism in their work. The **characteristics of environmental factors**

are: rules and standards, economic conditions, society's culture. Standards have an effect on auditors' attitude, and auditors' professional skepticism becomes stronger and weaker based on rules and standards. The economic conditions affect the activities of companies, as well as the social culture that will cause the auditors improving their level of professional skepticism based on it. According to the meta- synthesis method which is used, the results of this research are derived from the studies of other researchers, so they are completely in line with the previous researches. Despite the fact that in last ten years, professions have paid attention to the issue of professional skepticism in auditing and many academic research have been done in this field, **researchers are advised to** consider selected indicators in the research in order to study required infrastructures and existing challenges for professional skepticism in the auditing of financial statements. As it was found, the characteristics of auditing firm affected on professional skepticism the most, therefore, auditing firms should consider all the issues that will be the reason of better opinion of auditors. They should pay attention to preserve professional competence in addition to acquire professional competence. Auditing firms should have appropriate planning to establish reasonable professional skepticism between auditors and consider this issue in all of their affairs. Auditors should be in line with the firm's policies in terms of their professional skepticism. In addition, firms should always have continuous programs to improve the management style, proper planning of auditing, independence and training of auditors, and go forward to increase the size of the firm. Because by increasing the size of firm, they will do bigger things and this issue have to be paid a lot of attention.

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