



## The effect of auditors' mental structure on the independent auditor's work process with emphasis on the mediating role of continuous auditing

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### ABSTRACT

The use of continuous auditing and monitoring tools typically involves a long continuous chain of company operations. Special services of continuous auditing and continuous monitoring include conversion of manual methods to data, controls and automated processes, designing controls in all stages of formulating tests and supervising the routine of performing daily affairs, providing operational risk management services as well as preparing packages. Complete services include tools, installation, deployment, training and maintenance. The purpose of this research is the influence of the auditors' mental structure on the work process of the independent auditor, emphasizing the mediating role of the continuous audit process. The research hypotheses were analyzed using structural equation method through Smart PLS software. According to the purpose of the research of the statistical community, auditors working in auditing organizations and auditing institutions are considered as members of the public accountant's society of Iran. The number of respondents was 304. The snowball sampling method has been used to collect the required data in qualitative research. In this method, the future members of the sample are selected through the former members of the sample. Since the significance coefficients of the variables are higher than the absolute value of 1.96, the hypotheses of the research are confirmed; then it leads to believe that there is a meaningful relationship between the auditors' mental structure and the independent auditor's work process, and also continuous auditing plays a meaningful mediating role on the relationship between the auditors' mental structure and the independent auditor's work process. Continuous auditing is a vital tool for monitoring and providing assurance about business and financial information. In the international financial reporting environment, companies can benefit from the continuous audit system to ensure the quality of financial information reported online.

**Keywords:** mental structure of auditors, audit work process, continuous audit.

## 1. Introduction

Basically, financial reports are prepared periodically according to traditional methods (where) although collecting the information needed to prepare these reports based on the real time of the occurrence of events and transactions is very expensive, and thus, the reports are published months after the occurrence of the event. In this environment, auditing with a historical approach examines the correctness of previously reported figures. This is despite the fact that today, organizations can prepare financial information in a standard format based on the real time of events and transactions. Thus, such a method has created the opportunity for shareholders and other users to access financial information of companies at the same time as events and transactions occur. Furthermore, concurrent accounting requires simultaneous auditing to ensure continuous data quality. Simultaneously with the increase in the use of simultaneous accounting systems, the use of simultaneous auditing has also become common and allows auditors to reduce the time interval between the occurrence of events and the provision of audit accreditation services for those events (Soleimani Amiri and Shafizadeh, 2013). Continuous auditing is a process that allows auditors to validate information at the same time as they are disclosed (Cangemi, 2015). Although the auditing profession has proposed continuous auditing for a long time, continuous auditing still remains at the university level and has not been implemented, and this is the most important challenge in this field.

In every society, different occupations and professions active in the society, in addition to the principles and rules of general ethics, follow a special value system that has been accepted by the workers of that profession, which is called professional ethics. From another point of view, it can be said that the written set of ethical rules that defines and explains the way of behavior and the responsibility of the members of the profession in front of the society, in front of each other and in front of the interested parties, is called adherence to the code of professional conduct, which is not observed and violated. In addition to the possibility of punishment, it can cause a lot of cultural damage to that profession and even society (Hass Yaganeh et al., 2015). In fact, the professional code of conduct and adherence to it is considered one of the universal behavioral norms in any society, which defines the behavior of that job and its employees. In

the meantime, some jobs, such as those with more responsibility and accountability, will have a more considerate role from the point of view of observing professional behavior, because if they deviate from ethical principles, it can bring heavy social consequences. The auditing profession is considered as one of these jobs in today's societies, and any violation of its professional and behavioral principles can have irreparable consequences on the social status of the stakeholders' trust (Broberg et al. 2018: ). In fact, with the passage of time and the growing competition in the auditing profession, auditing service providers tried to provide services with different approaches compared to the past. Based on this, in line with the standards and code of professional conduct codified by the institutions and organizations that monitor the auditors' performance, the institutions tried to create behavioral models based on the responsible characteristics of the auditing profession in the society (Ismail and Yohanis, 2018).

The use of continuous auditing and monitoring tools typically covers a long continuous chain of company operations. Special services of continuous auditing and continuous monitoring including converting manual methods to data, controls and automatic processes, designing controls in all stages of formulating tests and monitoring the routine of daily affairs, providing operational risk management services as well as providing complete service packages including tools, installation, their establishment, training and maintenance. Continuous auditing and continuous monitoring include various elements and may be implemented at different levels. One of the key features of continuous auditing and continuous monitoring is to create relevant and timely information. By choosing a suitable solution and implementing it, it will be possible to reduce problems and prevent their recurrence. These matters are in complete contrast with the traditional independent auditing structure which is based on annual sampling and examination of findings in order to identify the problems that occurred during the period under consideration. Traditional audit methods are not optimal enough for at least two reasons. First, the traditional audit is based on sampling with a limited volume that covers less risk, and for this reason, all relevant data may not be involved in decision-making; Second, even if all problems are detected, the time interval between the occurrence of an event and its

detection may be so long that information cannot be reconstructed and retrieved (Byrne et al., 2016). This research seeks to discover the effect of new criteria (perceptual characteristics) in the mental structure of independent auditors on the implementation of the continuous audit process, and the variable of perception has been studied as a variable influencing the judgment and quality level of continuous audit of independent auditors. Considering that in most audit models and patterns, the role of logical factors is emphasized and irrational fields such as perception and intuition have been given less attention, so the innovation of this research is that by emphasizing the role of the variable of irrational perception, along with other logical variables, this research will evaluate its (what ) role and effect on the audit quality level.

The structure of the article is as follows:

After the introduction, in the second part, the theoretical foundations related to continuous auditing and its mental structure and triple functions are discussed. In addition, in the third part, the results of internal and external studies and the background of the research are mentioned. Also, in the fourth section, the research methodology and the method of collecting information and the sampling method are explained; And finally, the findings of the research and its results have been presented along with suggestions.

## 2- Theoretical foundations

### 2-1- Definitions of the main concepts

**Continuous audit:** Continuous audit is a type of audit that provides results at the same time or in a short period of time after the occurrence of relevant events (Cogan et al., 2009). Continuous audit can only be possible when:

- 1) it is fully automated processing.
- 2) implementing a process that allows simultaneous access to relevant events and their output.

**Continuous Monitoring:** Continuous monitoring allows an organization to monitor the performance of one or more processes, systems, or data types and provides information about information systems, daily sales volume, orders received and delivered, and payments made and payments in question.

**Continuous audit process:** The audit process has been developed from manual system audit with paper

documents to online continuous audit, which is a non-paper system for electronic exchange of information. Auditors have found that manual auditing (computer-based auditing) is not sufficient for a timely accounting system. If the auditor is forced to audit the financial statements of a business owner that uses a real-time accounting system, there is no possibility of accessing paper evidence because these evidences are either deleted or stored electronically under the real-time accounting system (Frandes et al. 2009).

**Mental structure:** the subjective nature of accounting estimates, pressures from management, the possibility of biased financial statements and threats related to fraud indicate that auditing should be applied considering the type of thinking (Rasso, 2014). According to Griffith et al. (2015), targeted and executive intellectual intervention can improve auditors' ability to identify irrational estimates by improving their ability to identify and combine contradictory information. Also, Rasso (2013), showed that the type of thinking of auditors (objective or executive) is effective in the level of interpretation of information (high or low) by auditors .

**Cognitive biases:** Cognitive biases affect the work of independent auditors in different ways. Firstly, auditors have basic responsibilities to evaluate a wide range of decisions made by different people, and such decisions are not unaffected by cognitive biases. Secondly, auditors should pay attention to how cognitive biases affect their decisions during the audit work. The most common systematic cognitive biases in the audit work process are:

- 1) **Confirmation:** Ignoring all information and tending to gather evidence that confirms the researcher's preferred or expected theory.
- 2) **Accessibility:** Kahneman and T. Versky (1890) found that decision makers tend to predict the probability of an event based on the accessibility of an example of that event in the mind.
- 3) **Similarity:** To simplify and speed up decisions related to similar issues; people tend to choose similar solutions that they have used in the past for similar events.
- 4) **Stabilist:** despite the different conditions, the decision makers do not want to change their performance and decision-makings, and choose the performance that they have adopted in the previous conditions and phenomena.

- 5) **Uncertainty avoidance:** In this bias, people tend to make their decisions quickly and choose solutions that have clear results.
- 6) **Framing:** The framework of presenting information related to a decision may influence the decision maker's chosen alternative.
- 7) **Aura:** a tendency that is positive as a result of the behaviors or characteristics of a person or an issue.

**Perception in auditing:** people assume that they are rational in their decisions; however, limited logic shows that it is not possible to make all appropriate and necessary information available to decision makers in a clear and understandable way. Based on limited logic, people often use simple methods to make decisions. This simplified method is called perception.

There are three basic types of perception that have been determined by psychologists:

1) **Available perception:** People's ability to determine choices and measure the possible consequences of these choices is often influenced by their previous experiences. It is very likely that the auditor remembers a situation where he has previously encountered, and that both previous experience and current decisions simultaneously influence the auditor's judgment, even if the situations are not exactly the same. Availability perception can be seen in the audit of financial statements in different ways. Auditors tend to look for different types of errors that they have encountered in previous audits. Available perception can lead to these three types of bias in auditors' judgments and affect their decision-making process: ease of recall, retrieval ability, and preconceived associations.

2) **Representative open perception:** In the audit process, representative open perception occurs when auditors decide to use the same audit program for different contractors. In this regard, five potential biases may arise: insensitivity to base rates, insensitivity to sample size, misperception about chance, bias towards the mean, correlation sophistry.

3) **Reliance and adjustment of perception:** Examples of reliance and adjustment of perception can be seen when the auditor in the next year, regarding the sample size or time specializations, audit operations will be conducted based on the audit schedule of the previous year: however, this year's new

conditions could change the accounting system, industry competitiveness, new product lines, or other conditions, and the auditor's adjustments may not provide a true picture of the new conditions. Three potential biases may arise from reliance and adjustment of perception, which are: adjustments of reliance to sufficient, continuous and discrete events, overconfidence.

## 2-2- The conceptual model of the research (explanation of the conceptual model)

### 2-2-1- Continuous audit models

The table on page 48:

When auditing, auditors should use active and creative methods. In this way, they will have a great impact on the quality of the audit judgment and ultimately the quality of the audit. In institutions whose auditors have a high philosophical mentality, it can be expected that the quality of judgment and the audit process in that institution will also be at an appropriate level (Abbasian Fereydoni et al., 2014). Therefore, if the auditor's philosophical thinking has the necessary comprehensiveness and flexibility, it will lead to a more correct professional judgment. Thinking and the ability to think correctly is one of the important issues that have occupied the minds of thinkers for a long time. Thinking is one of the basic issues of education that requires tools to cultivate it. One of these expressions is having a philosophical mind that helps people in correct and logical thinking (Smith, 2013).

What is a philosophical mindset?

It is a kind of attitude in the way of philosophical mentality which is a new phenomenon in the history of attitudes.

Philosophical mentality is the abilities and characteristics of the mind that help a person think correctly and accustom him to correct judgments (Smith, 2011). Philosophical mind means philosophical thinking and three functions have been proposed for it, which are

1-Theoretical function: which means that a person finds a framework for his thoughts and gives them a special system.

2- Analytical function: in the sense that a person reinterprets concepts and words.

3- Prescriptive function: it means to create suitable valuation criteria for the shoulds and don'ts. The level of philosophical mentality of people is one of the

factors influencing the improvement of the quality of their judgment because these factors enable a person: firstly, to be immune from self-centeredness, one-sidedness and intellectual stagnation in dealing with issues and problems and enable him to have correct and principled knowledge. Secondly, it gives people the ability to overcome radical new problems by presenting new solutions and guide them (Sharafi, 2011). When we consider the list of several approaches, for example, Taylor's scientific approach, Max Weber's bureaucracy, Fayol's administrative and Simon's decision-making, we notice that each of these theories addresses all the elements that organize an organization, but with emphasis on the centrality of a representation of the relevant elements; therefore, in each philosophy or theory, one of the elemental manifestations of the elements is emphasized, in this way, differences in attitudes emerge. This interpretation provokes thinking to express a super-philosophy or super-theory that can pay attention to all these emphases and attitudes in order to rationally justify appropriate behavior and make the best choice in dealing with the subject. Thus, one should pay attention to all matters with a philosophical mindset. It is possible to organize the elements of an organization with this attitude and coordinate all elements (Pour Faz, 2019).

Auditors who have a philosophical way of thinking pay special attention to professional principles and rules and consider issues related to the final goals of the audit and direct their activities in line with the final goals of the audit. Such auditors can understand the complexities in the audit environment and perform professional judgment effectively by separating the content of the created problem from its form. On the other hand, philosophical mindset has helped to strengthen auditors' perceptual skills so that auditors can connect the items in the accounting and auditing environment and interpret the effects of changes in accounting and auditing items. Comparison of continuous audit models includes: automatic audit, continuous audit paradigm, debt contract, which of these three models are used in:

- 1) correctness (fraud and mistakes) in transactions
- 2) reliability of internal control system
- 3) without delay
- 4) reporting method
- 5) Suggested data format.

The approaches of these three models are slightly different from each other; however, they all try to perform as close to non-latency as possible.

### 3- Research background

Chen et al. (2023) investigated the impact of multiple tax returns on behavioral compliance with tax laws. Using prospect theory and mental accounting, they investigated the behavior of taxpayers. The scope of the research included the elements of multiple taxpayer returns (multiple tax returns versus a single return). The findings of the research show that taxpayers with deferred debt payment (loss framework) compared to taxpayers with deferred repayment (profit framework) report more boldly. In other words, the bold behavior of taxpayers increases when the refund shows a multiple return against a single return. Also, the bold behavior of taxpayers in the state of debt payment is reduced, which indicates multiple declarations against the net of a single declaration.

Banner et al. (2023) in a study titled segregation accounting based on the sign and magnitude of financial statement items, came to the conclusion that managers' preferences for segregation reflect subjective accounting. In addition, the effects of mental accounting are moderated only when managers feel great pressure for reporting transparency. In addition, and most importantly, the preferred presentations of managers result in the highest valuation by investors.

Greenlabt and Hen (2023) investigated investors' willingness to hold loss-making stocks from the perspective of expectations and mental accounting theories. These two researchers stated that based on these two theories, there is a difference between the fundamental value and the equilibrium price of the stock, and also, the stock price reacts less than it actually does to the information. As a result of random evaluation of fundamental values and updating of reference prices, the difference is covered. In this research, an equilibrium model of asset prices, which is based on two theories of expectations and mental accounting; has been used

Hela et al. (2020) in a study entitled "Auditors' understanding of the impact of continuous auditing on the quality of financial information reported online in Egypt", concluded that the auditors of Egypt would understand the necessity of implementing continuous

auditing and subsequently the consequences resulting from it. Also, they understand the necessity of facing the challenges and the internet financial reporting environment. The results showed that auditors believe that continuous auditing can strengthen the reliability, relevance and comparability of financial information reported based on international financial reporting. In addition, the fact that the audit institution is one of the four big audit institutions leads to an increase in the impact of the continuous audit process on the quality of information provided on the Internet.

Chen and colleagues (2018) stated in a research titled "Continuous Auditing: Creating Automated Auditing Capability" that the modern (digital) economy has significantly changed the way of doing business and comparing financial information. Many organizations, whose number is increasing rapidly, do business and publish their financial reports online and in real time. Timely financial reports require continuous auditing to provide continuous assurance about the quality and validity of the information provided. Bhattacharjee et al. (2018) considered the profound effects of such work environments on the auditor's professional decision-making and its subsequent consequences on the auditor's efficiency and effectiveness. Research shows that the auditor working on several tasks in a short period of time affects his judgment. However, the implications of such work environments on auditors' judgment in situations where successive tasks are related neither to the same employer nor to domain-specific information have been largely ignored.

Wisner (2017) conducted a research titled "Three studies on the effect of psychological distance on judgment and decision making in auditing." The results of his first experimental study state that the auditors who have adopted an abstract mindset as a result of the previous audit work provide a lower probability assessment than the auditors who have adopted a realistic mindset as a result of the previous audit work. Griffith et al. (2015) in a research titled "Auditor's Thinking and Auditing Complex Estimates", experimentally showed that purposeful and thoughtful intellectual intervention can improve auditors' ability to identify irrational estimates by improving their ability to identify and synthesize information. contradictions caused by different audit departments and improve their ability to think critically about the evidence. The results showed that

the auditor's performance can be improved by making him think differently, and not just by doing the work in a more difficult way.

Raso (2014) conducted a research titled "Psychological distance: The relationship between interpretation, mindset and professional doubt." The purpose of his study was to investigate the effect of interpretation (psychological distance) and different ways of thinking on the professional doubt of auditors. The results of his research show that auditors with a deliberative mindset (based on reflection and consultation) will express higher professional skepticism when collecting and evaluating evidence than auditors with an instrumental mindset. Raso (2013) experimentally worked on the issue of whether a change in auditors' way of thinking has an effect on the amount of professional doubt used by them in evaluating complex estimates. He showed that by using the criterion of professional doubt, auditors with a purposeful way of thinking have higher professional doubt than both situations of executive and control way of thinking.

Anderson and colleagues (2010) examined how auditors evaluate the reasonableness of accounting estimates. For this purpose, they interviewed 15 experienced auditors belonging to large audit institutions and evaluated their performance and problems in practice. They showed that both the auditors' report of the compilers of regulations and standards (standard setters) rely too much on the statements of the managers of companies and economic units, and this itself is a factor for the auditors' inability to understand the management processes for making estimates, adequate testing of data, the underlying assumptions of these estimates, and the inconsistency of the estimates with other internal and external data. Auditors improve their performance according to the type of thinking applied in the work.

Ardila et al. (2022) in a research investigated auditor independence, auditor ethics, auditor experience, and appropriate professional care regarding audit quality. The results of this research showed that auditor independence has no effect on audit quality, auditor ethics has no effect on audit quality, auditor experience has a positive effect on audit quality, and professional care has a positive effect on audit quality. This research is expected to be a reference in auditors' decision-making based on audit

considerations available to the auditor to improve audit quality, especially from the auditor's experience and professional care.

Mahmoud et al. (2022) investigated the effect of professional ethics and the implementation of emotional intelligence on auditor performance. The emotional intelligence variable has a positive effect on auditor performance. So that future researchers can add other variables to the auditor's performance in addition to professional ethics and emotional intelligence or respond to them to achieve better research.

Zurieh (2021) investigated the effect of auditor ethics, audit fees and auditor motivation on audit quality in public accounting. Sampling In this research, saturation sampling was used. Data collection techniques in this research by distributing questionnaires among research respondents. The technique of data analysis in this study is multiple linear regression analysis. The results of this study show that the auditor's ethics, audit fee and auditor's motivation simultaneously have a significant effect on audit quality.

Latan et al. (2021) research entitled investigating the relationship between ethical awareness and professional judgment with the disclosure of secrets; They have performed the role of mediator of perceived ethics. The results showed that emotions play a mediating role in the relationship between moral awareness and professional judgment. Also, emotions and perceived morality can improve the relationship between professional judgment and intention to disclose secrets. The findings show that internal auditors disclosed more secrets than external auditors, and reporting internal mistakes anonymously is the preferred method of professional accountants to disclose secrets.

Adili et al. (2019) investigated the effect of the ethical culture of the audit institute and the auditors' personality types on the auditor's objectivity. The results indicate that the ethical culture of the auditing firm has a positive and significant effect on the auditor's objectivity. Also, being a conscientious personality type (obligation) also has a positive and significant effect on the auditor's objectivity. In addition, the findings show that the ethical culture of the auditing firm has an effect on the relationship between the auditors' personality types and the auditor's objectivity. Therefore, improving the ethical

culture of auditing institutions is an important step in the direction of enhancing the auditing profession and can increase the auditor's objectivity, and as a result, it should receive the attention and care of managers and partners of auditing institutions.

Nikbakht and Hosseinpour (2019) investigated the effect of management's motivations towards profit management and the relationship between the audit committee and the independent auditor on the quality of the auditor's judgment. The results of the analysis of the data extracted from 64 managers of audit institutions indicate that the motivations of management have a positive and significant effect on the quality of the auditor's judgment compared to profit management. Also, the variable of the relationship between the audit committee and the independent auditor has a positive and significant effect on the quality of the auditor's judgment. In addition, when there are high motivations versus low motivations of the management regarding profit management, the effect of the communication of the audit committee with the independent auditor on the quality of the auditor's judgment is positive and significant.

Gholamrezaei and Hasani (2018) investigated the effect of personality disorders on the professional doubt of independent auditors. The results of the research showed that there is a negative and significant relationship between the personality disorders of independent auditors and their professional doubts. Also, personality disorders have the most negative relationship with the measure of interpersonal perception of professional doubt. Paying attention to the factors related to auditors' personality disorders and trying to resolve these factors can have an important effect on improving the skills related to auditors' professional doubts. Ebrahimi Kardler and Akhundi (2018) investigated the integrated continuous audit approach . About three decades have passed since the introduction of the concept of continuous auditing, but despite the significant progress of researchers in increasing our understanding of continuous auditing as well as its application in practice, challenges still remain. Improving the audit implementation method, increasing cooperation between the internal and independent auditors, strengthening the internal auditor's role in corporate governance are among the challenges that this study tries to answer in a new framework with an integrated

continuous audit approach. Presenting this approach along with considering the three dimensions of audit tools, audit processes and the role of audit groups, shows the cooperation between audit groups in a single image format.

Javidi et al. (2017) investigated the influence of interpretation mindset on the auditor's judgment and decision-making: based on the psychological distance interpretation level theory. The results of the research show that auditors who adopted an abstract mindset as a result of unrelated previous audit work compared to their peers who adopted a realistic mindset provide a lower probability assessment for the occurrence of an event. In general, the results of this research show that psychological distance (mental structure) systematically affects people's judgment.

Rahmani Nia and Yaqub Nejad (2016) examined the factors affecting the ethical decision-making of internal auditors. The findings of the research indicate that the age of the internal auditor, the membership of the internal auditor in the Iranian Association of Certified Accountants, the gender of the internal auditor, the ethical level of the internal auditor's activity environment (ethical environment) and the organizational culture that is the field of the internal auditor's activity, can empirically influence the ethical decision making of internal auditors. Also, the results showed that those internal auditors who are more reflective and pay attention to the future consequences of their decisions when making decisions, are more ethical people and that the more internal auditors are free in performing their duties. They have more action (less limitation), they will have more expected remorse and thus they will pay more attention to moral standards in their decisions. Also, in examining the behavioral pattern of internal auditors, the results showed that internal auditors with purposeful thinking personality pay more attention to ethical issues.

Hajiha (2014) in a study entitled "Investigation and identification of factors affecting the implementation of continuous audit based on internal audit of companies", concluded that there is a significant relationship between all factors except the hope of improving the effort and motivation of internal auditors in using continuous audit. There is, in such a way that there is a positive and significant relationship between the hope of improving performance and the

motivation of internal auditors to use continuous auditing, there is a negative and significant relationship between the hope of improving working conditions and the motivation of internal auditors to use continuous auditing, and between There is a positive and significant relationship between social influence and the motivation of internal auditors to use continuous auditing.

## **4- Research methodology**

First, the snowball sampling method was used to collect the required data in the qualitative part of the research. In this method, the future members of the sample are selected through the former members of the sample. According to the data collected through interviews and library studies, the questionnaire was designed and compiled by the researcher. In order to measure the validity and accuracy of the questionnaire, five experts and experienced professors in the field of auditing were asked for their opinion that the questions are suitable and sufficient for measuring the variables. Then the final version of the questionnaire was prepared after applying their comments. Quantitative data collection was done through the aforementioned questionnaire, which was given to auditors working in the auditing organization and auditing institutions that are members of the Certified Public Accountants Society of Iran. A total of 304 valid questionnaires were received out of 361 sent questionnaires. After collecting the statistical data, for summary and calculations (testing the reliability and validity of the questionnaire and testing the hypotheses) from the Excel software and the research hypotheses were analyzed using the structural equation modeling method using the Smart PLS software.

### **4-1- Descriptive statistics**

The results of the demographic information of the sample of the statistical population are presented in Table 1. The results indicate that 74% of the target sample are men and 26% are women. Also, most of the sample has a master's degree or higher. Also, 47% of the work activity of the sample consists of independent auditors. Furthermore, 92 percent of the sample are graduated or are studying in the field of accounting.



Table (1) demographic information of the sample

percentage	numbers	item	Variable	percentage	numbers	item	variable
٤٧	١٤٤	Internal auditor	Occupation	٧٤	٢٢٢	male	gender
١١	٣٣	Certified accountant		٢٦	٨٢	female	
٤٢	١٢٧	Auditor of the Court of Accounts or member of the Audit Committee		٥	١٨	Master students	Education
١٨	٥٥	Less than 5	Years of experience	٤٢	١٢٦	کارشناس ارشد	
٣	٩	6-10		٨	٢٥	Phd students	
٣٤	١٠٤	11-15		٤٥	١٣٥	دکتری	
٢٩	٨٨	16-20		٩٢	٢٨٠	accounting	University major
١٦	٤٨	More than 20		٥	١٦	audit	
Source: Researcher's inquiries				٣	٨	Economics	

2- 4 -Tests of data fit and questionnaire reliability in factor analysis

In conducting factor analysis, first, it should be ensured whether the data can be reduced to a few hidden factors or not. For this purpose, two Keizer-Meir-Olkin and Bartlett tests were used. Table 2 shows the results of the test.

Considering that the values of Keyser's test statistic are higher than 70%, so the appropriateness of the data for factor analysis was confirmed. Also, according to the significance of Bartlett's corvit test, it

can be seen that the correlation matrix is not the same and there is a correlation between the variables and it is possible to perform factor analysis. Also, in this section, partial least square analysis (PLS) is used for statistical tests and model fitting. Based on this, Cronbach's alpha method, which is a type of internal consistency, was used to measure the reliability of the questionnaires. As shown in Table (3), the alpha value above 0.7 for each questionnaire indicates the appropriate reliability of all three questionnaires used in this research.

Table (2) data fit test results

Degree of Freedom	Significance	statistics	Type of statistics	statistics	Type of test
<٠/٠٠٠	٧٨٠	٢٢٦٠٤/٢٤	Corvit Bartlett's test	٠/٨٧٩	Keyser's test

Source: Researcher's calculations

Table (3) reliability measurement of the questionnaire

states	Cronbach's alpha	Latent Variables	Cronbach's alpha	The main structure
Accepted	895/0	Ethical characteristics	963/0	Mental structure of internal auditors
Accepted	882/0	Perceptual characteristics		
Accepted	878/0	Behavioral characteristics		
Accepted	854/0	Cognitive characteristics		
Accepted	968/0	Determination of priority areas	973/0	Internal continuous audit process
Accepted	945/0	Identifying the rules and determining the frequency		
Accepted	863/0	Results report and follow-up		
Accepted	93/0	Audit risk assessment	960/0	Independent audit process
Accepted	899/0	Audit planning		
Accepted	861/0	Implementation of operations and reporting		

Source: Researcher's calculations

### 5-Testing the conceptual model and research hypotheses

Structural equation modeling method with partial least squares approach and Smart-PLS were used to analyze the research data. Softwares that use structural equation modeling based on this statistical method are compatible with conditions such as collinearity of

independent variables, non-normality of data and small sample size (Hanlin and Kaplan, 2004). The output of the software, after testing the conceptual model of the research, is shown in Figure 1. Below are the results of the two parts of the measurement model test and the structural model test.

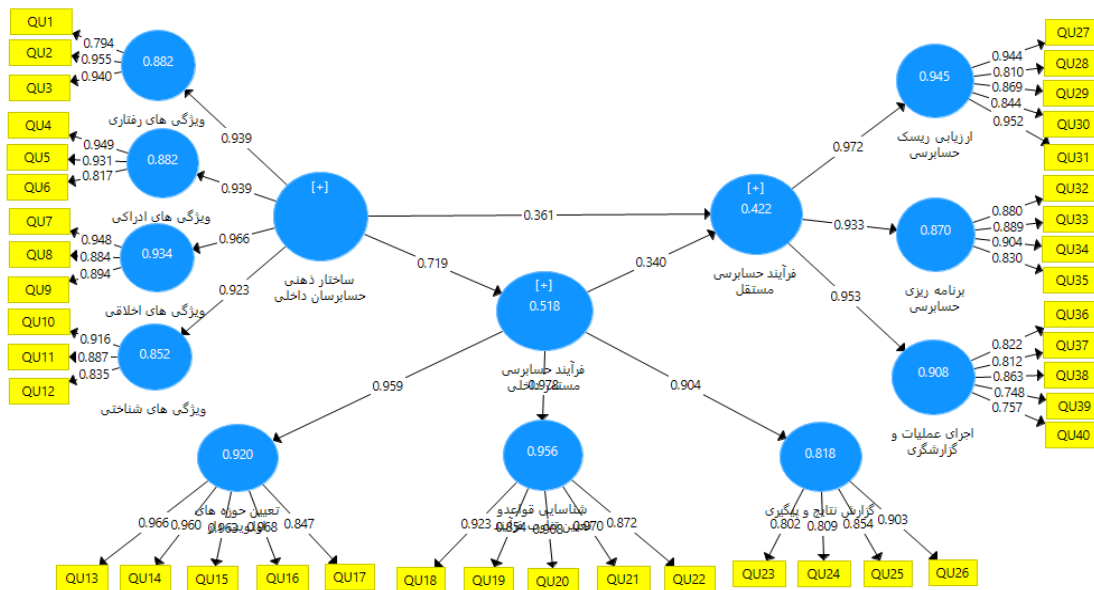


Figure 1. Conceptual model of research in standard mode

#### 5-1- Evaluation of the reflective measurement model

In the reflective measurement model, reliability, convergent and divergent validity are of great importance. Convergent validity refers to the degree of correlation that an indicator has with other indicators of the same variable. In this research, to check the convergent validity, the criteria of the external loads of the reagents, combined reliability and the extracted average variance have been used. According to Hivland (1999), in social science researches, it is worth thinking about maintaining variables with values between 40 and 70 percent if it does not harm the content validity of the variable and the composite reliability and average variance extracted and increases the mentioned criteria. Also, values greater than 0.5 for Average Variance Extracted (AVE) and greater

than 0.7 for Composite Reliability (CR) indicate the appropriate fit of measurement models and they are convergent in terms of reliability and validity (Holland, 1999). Table (4) shows the results of first and second order confirmatory factor analysis.

After conducting a confirmatory factor analysis, the results of which are shown in Table (4), it was found that all the items have a factor load higher than 0.4, average variance extracted above 0.7, and composite reliability above 0.5. This shows the appropriateness of this measure and the appropriate reliability of the measurement models. Also, in this research, the Fornell and Larcker criterion was used to check the validity of research divergence. Fornell and Larcker's criterion is based on the idea that a variable shares more variance with its determinants compared to other variables (Hair et al., 2017). The test results are presented in table number (5). After running the

PLS algorithm, the results of the analysis, in which the extracted average variance values are shown in bold and italics on the main diameter. As a result, according

to the criteria of Fornell and Larcker, divergent validity is established for the research model.

Table (4) results of first and second order confirmatory factor analysis

Second order confirmatory factor				First order confirmatory factor				index	Latent variable	The Main Structure	
C.R	AVE	Significance level	Load factor	C.R	AVE	Significance level	Load factor				
<b>.967</b>	<b>.713</b>	.000	<i>.939</i>	<i>.927</i>	<i>.809</i>	.000	<i>.794</i>	Q1	Behavioral characteristics	Mental structure of internal auditors	
							<i>.900</i>	Q2			
							<i>.940</i>	Q3			
		.000	<i>.939</i>	<i>.928</i>	<i>.812</i>	.000	.000	<i>.949</i>	Q4		Perceptual characteristics
								<i>.931</i>	Q5		
								<i>.817</i>	Q6		
		.000	<i>.966</i>	<i>.934</i>	<i>.826</i>	.000	.000	<i>.948</i>	Q7		Ethical characteristics
								<i>.884</i>	Q8		
								<i>.894</i>	Q9		
		.000	<i>.923</i>	<i>.911</i>	<i>.774</i>	.000	.000	<i>.916</i>	Q10		Cognitive characteristics
								<i>.887</i>	Q11		
								<i>.830</i>	Q12		
<b>.976</b>	<b>.707</b>	.000	<i>.909</i>	<i>.970</i>	<i>.888</i>	.000	<i>.966</i>	Q13	Determining priority areas	The work process of the independent auditor	
							<i>.967</i>	Q14			
							<i>.963</i>	Q15			
							<i>.968</i>	Q16			
		.000	<i>.978</i>	<i>.908</i>	<i>.821</i>	.000	.000	<i>.923</i>	Q18		Identifying the rules and determining the frequency of the process
								<i>.804</i>	Q19		
								<i>.908</i>	Q20		
								<i>.970</i>	Q21		
		.000	<i>.904</i>	<i>.907</i>	<i>.711</i>	.000	.000	<i>.802</i>	Q23		Results reporting and follow-up
								<i>.809</i>	Q24		
<i>.804</i>	Q25										
<i>.903</i>	Q26										
<b>.960</b>	<b>.762</b>	.000	<i>.972</i>	<i>.948</i>	<i>.784</i>	.000	<i>.944</i>	Q27	Audit risk assessment	Continuous audit	
							<i>.810</i>	Q28			
							<i>.869</i>	Q29			
							<i>.844</i>	Q30			
		.000	<i>.933</i>	<i>.930</i>	<i>.768</i>	.000	.000	<i>.880</i>	Q32		Audit planning
								<i>.889</i>	Q33		
								<i>.904</i>	Q34		
		.000	<i>.903</i>	<i>.900</i>	<i>.742</i>	.000	.000	<i>.830</i>	Q35		Implementation of operations and reporting
								<i>.822</i>	Q36		
								<i>.812</i>	Q37		
<i>.863</i>	Q38										
.000	<i>.903</i>	<i>.900</i>	<i>.742</i>	.000	.000	<i>.748</i>	Q39	Implementation of operations and reporting			
						<i>.707</i>	Q40				

Source: Researcher's calculations

**Table (5) Fornell's and Larcker's criterion to check divergent validity**

Latent variables	Implementation and reporting	Audit risk assessment	Audit planning	Determination of priority areas	, Identification of rules and determination of process frequency	Ethical characteristics	Perceptual characteristics	Behavioral characteristics	Cognitive characteristics	Results reporting and follow-up
Implementation of operations and reporting	953/0									
Audit risk assessment	802/0	•/•••								
Audit planning	823/0	•/••	•/••							
Determination of priority areas	411/0	•/••	•/••	•/••						
Identifying the rules and determining the frequency of the process	554/0	•/••	•/••	•/••	•/••					
Ethical characteristics	•/••	•/••	•/••	•/••	•/••	•/••				
Perceptual characteristics	•/••	•/••	687/0	•/••	•/••	•/••	•/••			
Behavioral characteristics	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••		
Cognitive characteristics	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••	
Results report and follow-up	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••	•/••

**5-2- Check the collinearity between the reagents**

The collinearity statistic indicates that the relationship between the independent variables is more than their correlation with the dependent variable; which causes the value of the determined coefficient to decrease. In

this study, the variance inflation factor was used to check the collinearity between the research variables, the results of which are presented in table (6). Considering that the values of the co-linearity statistics of all indicators are less than 5, there is no co-linearity between the indicators.

**Table (6) results of co-linearity of indices**

Colinear of index (VIF < 5)	Colinear value of indicators	index	Latent variables	Main Structure
Accepted	1/092	Q1	Behavioral characteristics	Mental structure of auditors
Accepted	2/410	Q2		
Accepted	3/743	Q3		
Accepted	1/034	Q4	Perceptual characteristics	
Accepted	1/190	Q5		
Accepted	1/610	Q6		
Accepted	4/162	Q7	Ethical characteristics	
Accepted	2/738	Q8		

Colinear of index (VIF < 5)	Colinear value of indicators	index	Latent variables	Main Structure
Accepted	2/073	Q9	Cognitive characteristics	
Accepted	2/620	Q10		
Accepted	2/317	Q11		
Accepted	1/82	Q12		
Accepted	3/934	Q13	DETERMINING priority areas	The work process of the independent auditor
Accepted	3/731	Q14		
Accepted	4/306	Q15		
Accepted	3/214	Q16		
Accepted	2/438	Q17		
Accepted	4/873	Q18	Identifying the rules and determining the frequency of the process	
Accepted	3/160	Q19		
Accepted	4/681	Q20		
Accepted	1/317	Q21		
Accepted	3/396	Q22	Audit risk assessment	
Accepted	2/02	Q23		
Accepted	1/824	Q24		
Accepted	2/327	Q25		
Accepted	2/981	Q26		
Accepted	3/933	Q27	Audit risk assessment	Continuous audit
Accepted	2/136	Q28		
Accepted	2/691	Q29		
Accepted	2/400	Q30		
Accepted	2/181	Q31		
Accepted	3/704	Q32	Audit planning	
Accepted	2/708	Q33		
Accepted	3/963	Q34		
Accepted	3/189	Q35		
Accepted	2/280	Q36	Implementation and reporting	
Accepted	2/038	Q37		
Accepted	2/603	Q38		
Accepted	1/799	Q39		
Accepted	1/869	Q40		

**5-3- Evaluation of the structural model**

The most important values used to evaluate the structural model are the coefficient of determination, which shows the prediction rate of the model. This coefficient is obtained from the square of the relationship between endogenous variables and predictor variables. According to (Hensler, 2009; Chen, 1998), three values of 0.19, 0.33 and 0.67 are considered as the criteria for weak, medium and strong values. Also, the predictive power of the structural model proposed by Geiser and Stone (1975) shows the appropriateness of the model's prediction. In fact, a model is appropriate when it predicts the endogenous

latent variables. In this research, the Q criterion was used to perform this test. Three values of 0.02, 0.15 and 0.35 are considered as the criterion values for weak, medium and strong values.

The results of both tests based on table (7) show the strong fit of the model with regard to the endogenous variables.

**Table (7) values of determination coefficient (R<sup>2</sup>) and prediction power coefficient (Q<sup>2</sup>)**

Q <sup>2</sup>	Significance level	R <sup>2</sup>	Latent variable	Main structure
0.729	0.000	0.934	Ethical characteristics	Mental structure of auditors
0.772	0.000	0.882	Perceptual characteristics	
0.776	0.000	0.882	Behavioral characteristics	
0.720	0.000	0.802	Cognitive characteristics	
0.760	0.000	0.920	Determining priority areas	The work process of the independent auditor
0.730	0.000	0.906	Identifying the rules and determining the frequency of the process	
0.048	0.000	0.817	Results reporting and follow-up	
0.794	0.000	0.940	Audit risk assessment	Continuous audit
0.729	0.000	0.870	Audit planning	
0.043	0.000	0.908	Implementation and reporting	

**5-4- The criterion of goodness of fit**

The overall model includes both measurement and structural model parts, and by confirming its fit, checking the fit in a model is completed. To check the fit of the overall model, the goodness of fit criterion (GOF) of Tenenhaus et al. (2005) is used:  $GOF = \sqrt{((AVE) \times (R^2))} = \sqrt{(0.854 \times 0.825)} = 0.839$  Considering that the GOF value is higher than 0.36, the overall fit of the model is strong.

**5-5- Test of research hypotheses**

After checking the fit of the measurement models and the structural model and having the appropriate fit of

the models, the research hypotheses were checked and tested. In the following, the results of the significant coefficients for each of the hypotheses, the standardized coefficients of the paths related to each of the hypotheses, and the results of the hypothesis examination at the 95% confidence level are presented in Table (6).

The significant coefficients of the variables are shown in Figure 1 and Table 6. Considering that the significance coefficients of the variables are higher than the absolute value of 1.96, the hypotheses are confirmed.

**Table (8) test of research hypotheses**

Test result	(T-Value)	Path coefficient (β)	Causal relationships between research variables	hypothesis
confirmed	306/5	361/0	There is a significant relationship between the mental structure of auditors and the independent auditor's work process.	H <sub>1</sub>
confirmed	907/3	244/0	Continuous auditing plays a mediating role on the relationship between auditors' mental structure and independent auditor's work process.	H <sub>2</sub>

**6- The conclusion of the research**

Today, organizations can prepare financial information in a standard format and based on the real test of events; Such a method has created the opportunity for shareholders and other users to access financial information of companies at the same time as events. Concurrent accounting requires simultaneous auditing to ensure continuous data quality. Simultaneously with the increase in the use of simultaneous accounting systems, the use of simultaneous auditing has also become common and allows auditors to reduce the time interval between the occurrence of events and the

provision of audit accreditation services for those events. Continuous auditing is a process that allows auditors to validate information as it is disclosed. This research has two hypotheses. According to the first hypothesis of the research that the path coefficient is 0.361 and its T-Value is 5.306, it can be concluded that the mental structure of auditors has a significant relationship with the independent auditor's work process. Also, in the second hypothesis, because the path coefficient is 0.244 and its (T-Value) is 3.907, it can be concluded that continuous auditing plays a significant mediating role on the relationship between

the mental structure of auditors and the independent auditor's work process.

## 7-Practical research proposals

- 1) Due to the fact that human resources are the most important capital in auditing institutions, it is suggested that auditing institutions should focus more on issues related to personality disorders in their personnel, at appropriate times and by using the knowledge of psychologists, than identifying and eliminating personality disorders. Affect the quality of auditors' work.
- 2) In order to prevent the occurrence of personality disorder and to resolve this type of disorder in time, it is suggested that audit institutions develop specific programs to describe issues related to personality disorder to their employees and improve their knowledge level in this field.
- 3) It is suggested that by not assigning unrelated tasks to the auditors, training them to create the ability to mentally access positive information in order to plan for them, and to remove inappropriate criticisms, reduce the number of negative emotions in the auditors and improve their performance.
- 4) Also, it is suggested that audit institutions formulate their audit programs in such a way as to increase and strengthen employees' sense of belonging to the work environment; In this way, the amount of disruption reduced in staff.
- 5) By teaching how to create logical arguments, the level of opposition of auditors can be reduced and help to improve their decision-making. Also, by examining auditors' behavior in the work environment and being aware of their knowledge of the work environment, the audit work can be planned in such a way as to reduce the level of disorientation and psychosis of auditors. In addition, by recognizing the thinking patterns of auditors and replacing these patterns with positive thoughts through supporting and strengthening positive thinking and encouraging people to pursue the treatments they need, it is possible to help improve auditors' psychosis.

## 8-Research limitations

- 1) Limitations in generalizing the results to other societies due to the use of a limited statistical sample;
- 2) The limitation due to the type of information gathering tool and the validity of the research tool to the questionnaire, which makes it difficult to access complete and comprehensive information. These questionnaires are in the form of attitude measurement and caution should be taken in interpreting the results due to the limitations of the validity of the questionnaires. Therefore, in this research, due to the use of questionnaires, people's attitudes have been investigated, not reality.
- 3) Limitation due to the way subjects answered and the different diagnosis characteristics of people and the effect of these characteristics in completing the questionnaire.
- 4) The loyalty and honesty of the respondents in choosing the options and in other words the way they answer are among the limitations that can affect the results of the research. This situation may be caused by the concern of the respondents in clarifying their comments and revealing their secrets, or it may be caused by some cultural characteristics of eastern societies, including exaggerations and minimizations without logic and simply because of communication and emotions.
- 5) Tiredness, busyness and lack of motivation of people when answering the questions and completing the questionnaire

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