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The effect of thinking styles on the auditor's objectivity considering demographic characteristics

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Abstract

It is important and necessary to pay attention to the factors affecting auditors' judgments and decisions. Researchers believe that by identifying the personality traits of people, including auditors, their behavior and performance can be predicted. Therefore, it is possible to examine the auditor's objectivity by knowing the characteristics of people, including thinking styles. Therefore, based on this argument, the present study examines the impact of thinking styles on the auditor's objectivity by considering demographic characteristics. The statistical population studied in this research includes all audit employees working in audit institutions, members of the official accountants of Iran and the audit organization in 1401. In this questionnaire, Svanberg et al.'s [38] questionnaire was used to measure the auditor's objectivity, and Sternberg's [37] research questionnaire included 4 items (executive, judgmental, generalist, detailist) for the variable of thinking styles. SmartPLS third version software was used for data analysis. The results showed that, according to the obtained path coefficients, there is a positive relationship between the auditor's thinking styles and the auditor's objectivity, because the value obtained was greater than 1.96, which indicates the existence of a significant positive relationship between the auditor's thinking styles and the auditor's objectivity. Based on this, the first to fourth research hypotheses are accepted. Also, according to the fifth hypothesis, demographic characteristics directly and significantly affect the auditor's objectivity, and the fifth hypothesis is also accepted.

Keywords: thinking style, audit objectivity, demographic characteristics
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1 Introduction

One of the characteristics of humanity is the use of the power of thinking, which means that people will dominate complex environments with their thoughts and continue their lives. Therefore, people use thinking styles in their professions to do professional things. According to research in the field of psychology, people's thinking styles are different [42], because people's thinking style is considered an important factor in information processing. Therefore,

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thinking style refers to how to use these abilities [37]. The results of this research include the fact that thinking styles have an effect on a specific approach and differences and how individual responses to a specific situation and the specific approach of people in processing and evaluating information and solving problems and making decisions and judging and commenting are affected by thinking styles [4].

Information processing is essential in accounting. Auditors must make judgments and decisions based on information processing. The higher the level of information evaluation and processing, the higher the quality of the auditor's decisions and judgments. Thinking style can influence auditors' judgment and decision-making. Therefore, it is essential to know and apply thinking styles and their impact on the auditor's objectivity. Because not paying attention to it leads to ignoring the abilities of auditors in judgment and decision-making. The subjective nature of accounting estimates, pressures from management, the possibility of financial statements being biased, and threats related to fraud, all indicate that auditing should be applied considering the type of thinking [39].

According to the mentioned cases and based on the results of the work of authors such as Johannessen (2023) who showed targeted and executive intellectual intervention can improve the ability of auditors to identify unreasonable estimates by improving their ability to identify and combine conflicting information from different parts of the audit and improving their ability to think critically about evidence [22]. Also, Takeda [39] showed that the type of thinking of auditors (objective or executive) has an effect on the level of interpretation of information (high or low) by auditors. Thinking styles are part of rational methods and are defined as ideals in the use of individual abilities [24]. Arslanoglu et al. (2018) call it a subjective self-governance because there are different ways to govern a society, and there are different ways by which a person is willing to use their abilities [5]. The basic idea of his theory is that the types of governments in the world did not just happen by chance, but they are external reflections of what is happening in people's minds. That is, they reflect the different ways in which people control and organize their minds. Therefore, governments are mirrors of people's minds. Sternberg uses the term government metaphorically to show that there is a balance between individual organization and social organization. Sternberg's theory is based on the assumption that people like cities, states or countries need to govern and control themselves. Governments also have different dimensions such as function, form, levels, scope and orientation [16]. In general, the model of Sternberg's thinking styles includes three functions, four forms, two levels, two ranges or ranges, and two tendencies. The three important functions of governance are: legislative or creative, executive or fulfilling, and judgmental or evaluative. The four forms of government are: monarchy or monopoly, hierarchy or tyranny, oligarchy or jirga, lawlessness or anarchy. Two levels of government are: general or comprehensive, local or partial. The two ranges are introspective or internal affairs and extroverted. Two trends are conservative and liberal [8]. The auditor's objectivity is one of the most important topics of auditing, which has been taken into consideration in the formulation of auditing standards and related regulations. If the auditors have an objective attitude, the audit creates added value for the financial statements and is not only a control factor, but also causes trust in the financial statements and protects the interests of society. Therefore, measuring the auditor's objectivity and introducing its measurement tools is of particular importance. Therefore, the current research seeks to find an answer to the question of whether managers' thinking styles affect the objectivity of the company's auditor or not. If the answer is positive, what is the type of impact?

2 Theoretical foundations of research

The auditing profession is very similar to judging in courts. Judges and auditors face claims that collect and process evidence supporting the claims and finally make decisions and judge based on the frameworks available to them [25]. Judgment and decision-making are the main elements of auditing. Judgment plays a very important role in the audit of financial statements, so that all audit stages are accompanied by judgment [20, 29]. Individual psychological differences affect people's professional judgment [33].

In today's competitive world, one of the key components of success is awareness and recognition in the field of thinking styles. Familiarity with thinking styles helps people to develop their decision-making and problem-solving strategies, and this reduces wrong decisions [17]. In this regard, El-Sayed et al. (2021) defined the different ways of people in processing information as thinking styles [12]. Also, thinking styles are mental frameworks that help people process information and solve problems in specific contexts. Thinking style is not an ability in itself, but refers to how the abilities are used. Non-accounting studies conducted on the need for cognition have usually examined how information is used by people who have different needs for cognition [15]. In these studies, the decision-maker is allowed to be flexible in collecting data, and ultimately, he is expected to use this data to make a decision that is appropriate to the decision-making platform [14]. In general, these studies show that people with a high need for cognition think more about basic (factual) arguments and are less influenced by environmental (side) cues. Those with lower cognitive needs are more influenced by simple cues such as the expertise or attractiveness of the message

source or the number of arguments in the message [41]. These studies do not include data collection cost limitations, such as scarce resources and time constraints. Past studies of accounting decisions have typically focused on cognitive styles and abilities rather than the need for cognition. Cognitive styles are characteristic variables (that is, they remain constant in a person over time) and describe different ways of processing information by people. On the other hand, cognitive abilities are skills related to encoding and retrieving information. Cognitive abilities are situational variables and change throughout a person's life. Meanwhile, some researchers have addressed the question of whether the need for cognition should be classified as a type of cognitive style or not. Therefore, the thinking style affects the information processing process, professional doubt, judgment and decision-making [16].

The basic characteristic of humans is the power of thinking. With the help of their thoughts, humans have been able to dominate and continue their lives in their complex and changing environment. In any profession, people use their thinking style to do professional things. Meanwhile, thinking styles have an impact on people's skepticism. Studies in the field of psychology have shown that people have different thinking styles [35]. People's thinking style is an important factor in information processing.

2.1 Demographic characteristics, auditor's thinking styles and objectivity

The study of thinking styles is to investigate how to improve performance at an optimal level in the workplace. Using a specific thinking style in a specific condition and situation will bring the possibility of improving the level of performance and results. The intersection of the thinking style with the specific work environment increases the possibility of improving the performance in that field [34]. The difference in thinking styles affects learning conditions, solving upcoming problems, the decision-making process, communication and team participation and teamwork. Also, according to the research of Rigg and Sparrow (1994), it was shown that they consider skepticism, which is the basis of judgment in auditing, to be affected by individual characteristics and consider individual tendencies involved in the use of different degrees of professional skepticism in judgment and decision making [32]. Auditing financial statements is essential because audited financial statements can provide confidence to investors and creditors that they are provided with valid and reliable information; Therefore, the audit of financial statements can create added economic value for a company. One of the determining factors in the quality of audit services is having the professional experience of the auditor in the field of matters under consideration [36]. Experience has an undeniable effect on the accuracy of the auditor's judgment. Experience increases the auditor's abilities in processing information and creating different solutions in specific situations. Also, experience creates a structure for the auditor's judgment, and this structure, experience, creates decision-making methods and information interpretation. Nemati Keshtali et al. (2019) showed that auditors with special expertise in auditing an industry have higher audit quality for two main reasons. Firstly, more familiarity with accounting and auditing issues and problems of those industries due to the continuous implementation of its auditing and secondly, the motivation to gain and maintain a reputation in the auditing of that group of specific industries [28]. The research conducted by Haider and Nikoumram (2017) indicates that there is a positive relationship between the type of industry the auditor specializes in and the quality of the auditor's report. In other words, auditors who have experience and expertise in the industry in question, due to their ability to identify and deal with the specific problems of that industry, can perform audits with higher quality [18]. In addition, the more experience an audit firm gains in a particular industry, the more interested it is in providing audit services of superior quality due to the positive reputation it has built. Auditors with better experience can identify errors and provide more acceptable explanations for errors in financial reports [7]. Accounting information is prepared by company management and should be audited by someone independent of the company in order to meet the needs of users and decision makers at the micro and macro levels. These persons must have sufficient knowledge, education, expertise and skills in the field of accounting and auditing. Training human resources specialized in accounting and auditing requires an effective and efficient educational structure in this field. The accounting education system in any country should be developed according to the local needs of that country. Due to the role of auditors, these people must have the necessary education in addition to experience. In addition to the experience of the auditor, the level of education of auditors can also affect their commitment and professional judgment. The higher the level of education of auditors, the more knowledge and information they have. The required knowledge of auditors should be at least a university education in accounting and related fields [1]. During the audit process, many problems and disagreements arise between auditors, accountants and company managers, and auditors need to be able to make the right decision by properly analyzing the problem. In this context, the education of auditors strengthens their ability to analyze and solve issues and problems and teaches them the necessary skills to organize audit operations and time management [3]. Knowledge and education increase auditors' understanding and help auditors in identifying and understanding cases of non-compliance, disagreement or ambiguity regarding the company's activities. In addition, the level of knowledge and education has a significant impact on the independence of auditors' votes [9]. Auditors who have a higher education have a higher cognitive ability and can identify the complexities and bottlenecks in the field of handling audit issues

faster than others. As a result, auditors with higher knowledge and education have more ability to identify and solve problems [10].

Gender has an impact on people's thinking style. Studies in the field of psychology have shown that the thinking style of women is different compared to men [44]. Also, gender is considered as a moderating factor in the relationship between thinking style and information processing. The results of these studies indicate that men use the right hemisphere of the brain and women use the left hemisphere of the brain to process information [31]. Also, behavioral research shows that men focus on only part of the available data in information processing, but women focus on and use all or most of their information in information processing [11]. Auditors' performance in judgment and decision-making can be influenced by thinking styles. Since so far no research has examined the impact of thinking styles on audit objectivity, and on the other hand, considering the level of honesty of the auditor in presenting audit findings and results, conducting this research is of particular importance.

2.2 Research hypotheses

First hypothesis: Executive thinking style has an effect on the auditor's objectivity.

The second hypothesis: the judge's thinking style has an effect on the auditor's objectivity.

The third hypothesis: the holistic thinking style has an effect on the auditor's objectivity.

The fourth hypothesis: detail-oriented thinking style has an effect on the auditor's objectivity.

The fifth hypothesis: Demographic characteristics have an effect on the auditor's objectivity.

2.3 The empirical background of the research

Hongdizi et al. [21] examined the effect of analytical processing on divergent and convergent thinking tasks, emphasizing the role of logical and experimental thinking styles, and the results showed that initial analytical processing improves convergent thinking performance, but fluency and flexibility scores reduce in the task of divergent thinking. It is noteworthy that the effect of initial analytical processing on divergent thinking performance was significant only for participants with higher levels of logical thinking style. These results show that thinking styles and dimensions of creativity should be considered in the relationship between analytical processing and creativity. Audit firms, despite their recent rhetoric and initiatives, remain largely homogenous in character. These results provide timely evidence to support audit firms' efforts to reassess and revise their diversity, value, and inclusion efforts. Ma-Kellams (2020) investigated cultural diversity and similarity in cognitive thinking styles versus judgmental biases. The results showed that ambiguous findings emerged for other cognitive biases such as hindsight bias, positive illusions, and social exchange. To accommodate this paradox, error management theory suggests why consistent variation in thinking style does not necessarily lead to similar consistent differences in cognitive biases [23].

Different mechanisms drive preferences (i.e., how we think) versus actual behavior (i.e., involving judgments/decisions). While different features of the physical environment are likely to cause differences in preferences, the pressures of the social environment are likely to drive cognitive processing in shared judgment tasks (such as inferring another person's mind or one's own mind) in similar directions. Organizational culture is one of the influencing factors on the behavior of employees in the organization. Establishing a suitable organizational culture in auditing institutions can be an effective mechanism for reporting organizational mistakes in the auditing profession [26].

Regarding the internal background, because internal studies have not directly investigated the effect of thinking styles on the auditor's objectivity with the moderating role of auditors' demographic characteristics; Therefore, the most relevant researches conducted in this field are mentioned. Adili et al. (2019) investigated the effect of the ethical culture of auditing institutes and auditors' personality types on auditors' objectivity. The results of the findings showed that the ethical culture of the audit institute 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 auditors' 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 [2]. In a research, Badpa et al. (2018) examined the effect of the auditor's supportive attitudes and familiarity with the employer on the auditor's initial judgment and evidence search strategy. The results indicate that familiarity with the employer hurts the objectivity of the auditor's judgment. The familiarity of the auditor with the employer does not have a significant effect on the evidence search strategy. Also, the unbiased mental attitude causes objectivity in auditors' judgments, but high-level and low-level supportive attitudes of auditors lead to their non-objective judgments. There is a positive and significant relationship between the auditor's initial judgment and

the audit evidence search strategy. There is a positive and significant relationship between the auditor's supportive attitude and the audit evidence search strategy [6].

Haider et al. [19] showed that the thinking style of the legislator has a significant and negative effect on professional doubt. Also, executive, judgmental, introspective, extroverted and free-thinking styles have a significant relationship with professional doubt. Rahnamai Roudpashti et al. [30] showed that there is a significant difference between men and women in the thinking levels of legislators and judges, but this difference is not significant in executive style. Also, by further analyzing the results separately for the public and private auditing sectors, they pointed out that in the private auditing sector, there is a significant difference between men and women only in the level of judicial thinking, however, in the public sector, gender only creates a significant difference in the legislative and judicial levels, and there is no significant difference in the level of executive thinking [12].

3 Research methodology

The current research is an applied research in terms of its purpose, and in terms of the method of data collection, it is a post-event semi-experimental research in the field of accounting proof research. In terms of the data analysis method, it is cross-sectional correlational research, because it studies data related to a specific time period. The data of the research will be collected through the library and field with the questionnaire tool and the data related to the variable of the auditor's objectivity was also collected by sending a questionnaire to the auditors working in the auditing organization and auditing institutions that are members of the Certified Public Accountants Society of Iran as a sample. In this questionnaire, Svanberg et al.'s [38] questionnaire was used to measure the auditor's objectivity, and Sternberg's [37] research questionnaire included 4 items (executive, judgmental, generalist, detailist) for the variable of thinking styles. The reliability of the questionnaire was evaluated through the calculation of Cronbach's alpha and composite reliability, and to ensure content and form validity according to experts and standard questionnaires, and for construct validity, confirmatory factor analysis and convergent and diagnostic validity were used. Finally, due to the volume of samples, SmartPLS third version software was used for data analysis. The socio-statistics studied in this research include all audit employees working in audit institutions, members of the official accountants of Iran and the audit organization in 2022.

Therefore, according to the number of items (questions) of the questionnaire used in this research, at least 330 samples were needed.

For this purpose, 500 questionnaires were randomly distributed among the auditors of socio-statistics, of which 455 of the 475 returned questionnaires were usable, and their data were analyzed.

3.1 Conceptual model and how to measure research variables

According to the theoretical foundations of the research, the conceptual model of the current research is presented in Figure 1 based on the method of structural equations.

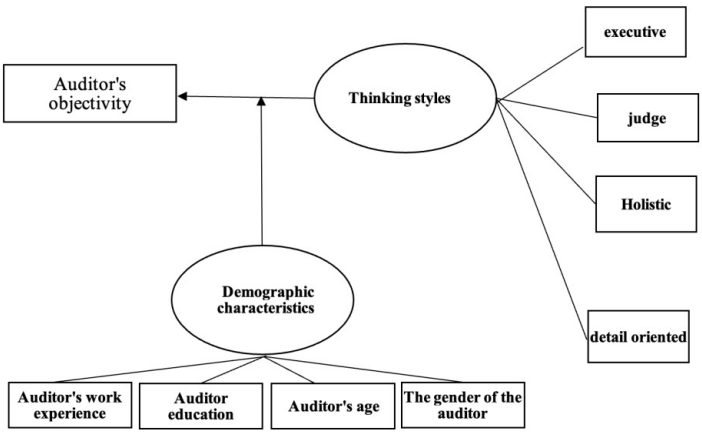

Figure 1: Conceptual model of the research

3.2 Independent variable: thinking styles

The independent variable of the current research is thinking styles. Sternberg [37] questionnaire was used to measure thinking styles. This questionnaire examines 5 test items. These test items include executive thinking style, judgmental thinking style, holistic thinking style, and detailed thinking style. Each test item contains 4 questions and measures one thinking style. This questionnaire contains 16 questions, the answers are based on a seven-option Likert scale, where 1 is the lowest level in a thinking style and 7 is the highest level in a thinking style.

3.3 Dependent variable: auditor objectivity

To measure objectivity, short scenarios were designed and the respondent was asked to consider them about the largest employer of the institution. The issue is about the situations in which the auditor and the employer disagree. The respondents are asked to express the probability of giving up their position and accepting the employer's opinion in the form of a Likert scale. Too many options indicate a higher probability that the auditor will give in to the employer's request and not pay attention to their judgment. Very little option indicates more objectivity of the auditor.

3.4 Moderator variable

Moderating variable: The moderating variable used in this research is the demographic characteristics, which include the auditor's gender, the auditor's age, the auditor's education, auditor's work experience.

4 Research findings

4.1 Descriptive Statistics

Table 1 shows the descriptive statistics of the tested variables, which include some central and dispersion indicators.

Table 1: Descriptive statistics related to research variables

Indicator	Mean	Standard deviation	Maximum	Minimum	Mode
Auditor's objectivity	27	5.2	5	1	3.5
Demographic characteristics	14.75	4.5	7	1	4.9
Executive thinking style	17.19	5.70	7	1	4.8
Judgmental thinking style	26.32	7.14	7	1	4.2
Holistic thinking style	19.66	5.93	7	1	3.7
Detail-oriented thinking style	22.73	6.68	7	1	2.5

Table 1 shows the descriptive statistics of research variables, which include some central indicators. For example, the auditor's objectivity questionnaire has 9 questions on a Likert scale, where a low score means high objectivity in auditing by auditors. According to the range of scores from 9 to 27 in this questionnaire, with an average score of 27, the results show that the average score of the auditor's objectivity in the examined sample group was lower than the average of the test. This means that the auditor's objectivity is high.

4.2 Data analysis

Before analyzing the data in the form of a research model, it is necessary to mention the evaluation of the research questionnaire. As mentioned in the research method section, the reliability evaluation of the questionnaire was done by calculating Cronbach's alpha coefficient and composite reliability index. To confirm the reliability of the questionnaire, the value of Cronbach's alpha coefficient and the value of the combined reliability index should be greater than 0.7. In order to evaluate the validity of the questionnaire, experts and convergent validity (AVE) were used. The desirable value of the criterion (AVE) to confirm the validity of the values is greater than 0.5. The results of these evaluations are shown in Table 2. According to the inserted values, the validity and reliability of the data collection tool is confirmed.

In addition to convergent validity, based on the theory of Fornell and Larcker [13], in the investigation of divergent validity of constructs, the root mean square of the extracted variance (AVE) for each construct is compared with the correlation coefficient between constructs. In table (3), the bold numbers in the main diameter of the table are the square root of the average variance extracted. If the values of the main diameter for each hidden variable are greater than the correlation of that variable with other reflective hidden variables in the model, the divergent validity

Table 2: Cronbach's alpha coefficient, composite reliability, convergent validity

Variable	Cronbach's alpha coefficients	Composite reliability (CR)	Convergent validity (AVE)
Executive thinking style	0.890	0.961	0.640
Judgmental thinking style	0.910	0.850	0.526
Holistic thinking style	0.870	0.870	0.702
Detail-oriented thinking style	0.789	0.910	0.701
Auditor's objectivity	0.845	0.869	0.427

Table 3: Divergent validity assessment matrix

Variable	Thinking styles	Auditor's objectivity
Thinking styles	0.7641	
Auditor's objectivity	0.4215	0.7228

is confirmed at the construct level. According to the output of the Fornell and Larcker test in SmartPLS software, divergent validity is confirmed.

In order to evaluate the validity of the research instrument and to discover the constituent factors of each obvious variable, confirmatory factor analysis was used, and based on the output of the software and after removing the items that had a low factor load, the validity of the research instrument was also confirmed.

4.3 Model fitness

One of the fit criteria is the general model fit (GOF) criterion. This criterion has been proposed by Tenenhaus et al. [40], which is used as a criterion for measuring the overall performance of the model [27]. Wetzles et al. [43] have introduced three values of 0.01, 0.25 and 0.36 as weak, medium and strong for this criterion. The test results of this criterion are presented in table 4.

Table 4: Overall model fit criterion

Variable	The coefficient of determination R^2	Subscription amount of communality	GOF
Thinking styles	0.581	0.581	0.398
Auditor's objectivity	0.425	0.425	0.409
Average	0.503	0.503	0.317

According to the results of Table 4, the value obtained for the GOF criterion is equal to 0.317, which shows the acceptable fit of the research model.

4.4 Checking the measurement model

A measurement model is a model in which relationships between variables are considered and measured. To check the fit of measurement models, three criteria of reliability, convergent validity and divergent validity are used. The numbers of factor loadings and t coefficients between all questions are indicated in the diagram below. The criterion value for the appropriateness of factor loading coefficients is 0.4 and t coefficients is greater than 1.96. As it is clear from the diagram, the value of the factor load and the t coefficient for all questions are more than 0.4 and 1.96, respectively, and it shows that there is no need to change the questionnaire and the model.

Table 5: Results of factor loading and t coefficient of variables

Variable	Factor load	t coefficient
Executive thinking style	0.910	9.214
Judgmental thinking style	0.983	8.389
Holistic thinking style	0.752	10.206
Detail-oriented thinking style	0.841	11.541
Holistic	0.883	9.333
Comprehensive	0.950	10.208
Degree orientation	0.887	8.314
Gender	0.608	6.804
Age	0.539	4.705
Education	0.638	6.714
Work experience	0.712	12.348

4.5 Testing hypotheses

To test the hypotheses, we must check the path coefficients and the significance of the path coefficients. The criterion for confirming the hypotheses is the significant value of the path coefficients, which must be greater than 1.96. In Figures 2 and 3, the research model is displayed in two modes of path and significance coefficients.

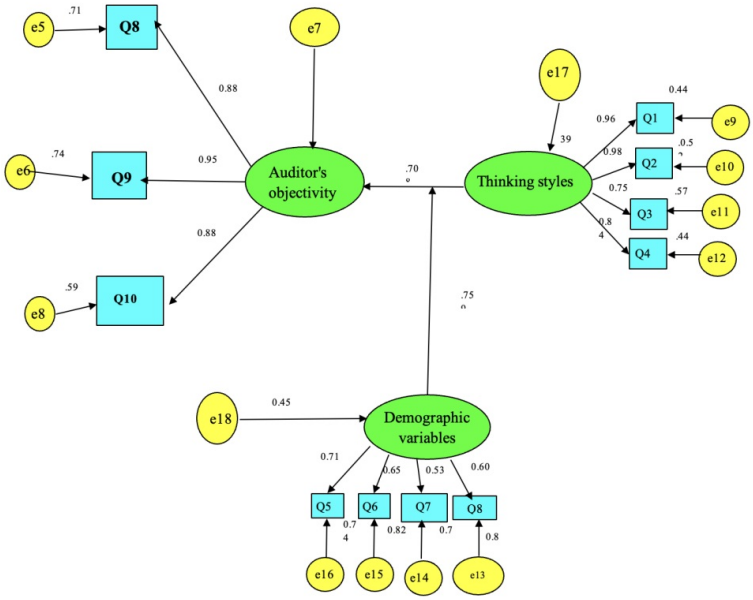

Figure 2: Research model in the mode of path coefficients

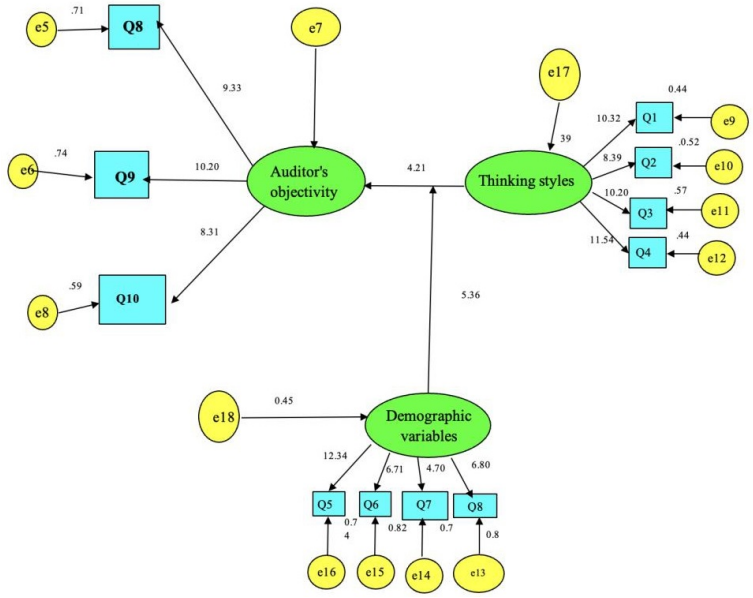

Figure 3: Research model in meaningful mode

As seen in the table above, there is a positive relationship between the auditor's thinking styles and the auditor's objectivity, because the value obtained is greater than 1.96, which indicates the existence of a significant positive relationship between the auditor's thinking styles and the auditor's objectivity. Based on this, the first to fourth research hypotheses are accepted. Also, according to the fifth hypothesis, demographic characteristics directly and significantly affect the auditor's objectivity, and the fifth hypothesis is also accepted.

Table 6: A summary of the results of the model analysis and research hypotheses

Direction	Symbol	Path coefficient	t statistic	The result of the hypothesis test
Executive thinking style → Auditor's objectivity	ETS → AO	0.962	10.321	acceptance of the hypothesis
Judgmental thinking style → Auditor's objectivity	JTS → AO	0.983	8.399	acceptance of the hypothesis
Holistic thinking style → Auditor's objectivity	HTS → AO	0.752	1.206	acceptance of the hypothesis
Detail-oriented thinking style → Auditor's objectivity	PTS → AO	0.841	11.451	acceptance of the hypothesis
Demographic characteristics → Auditor's objectivity	DC → AO	0.759	5.368	acceptance of the hypothesis

5 Research conclusions and suggestions

From the time of Socrates and Aristotle until now, there have been many discussions about thinking and its nature and stages. Thinking is a process through which a new mental representation is created by information transformation and interaction between mental properties, judgment, abstraction, reasoning and problem solving.

Armstrong and Cools [4] showed in a research that thinking styles have an effect on the specific approach and individual differences of people and how individual responses to a specific situation.

The specific approach of people in processing, evaluating information, solving problems, making decisions, judging, and commenting is affected by thinking styles. Therefore, the basic characteristic of humans is the power of thinking. With the help of their thoughts, humans have been able to dominate and continue their lives in their complex and changing environment. In any profession, people use their thinking style to do professional work. Meanwhile, thinking styles have an impact on the auditor's objectivity. Studies in the field of psychology have shown that people have different thinking styles.

Therefore, based on the results obtained from the first to fourth hypotheses of the research, there is a significant relationship between the auditor's thinking styles and objectivity.

The obtained result can be argued that storing and processing information in the mind has a fixed and distinct method that is independent of intelligence. On the other hand, the concept of thinking styles from a biological point of view, mind, personality, self-confidence is at the intellectual level and has a psychological origin. Thinking styles give intellectual direction to the owners of different jobs, and according to the researches, they determine the causes of success and failure in different jobs. In choosing their jobs, people should not only pay attention to their abilities, but also need to measure the compatibility of their thinking style with the desired job. Differences between thinking styles can even cause misunderstanding, incompatibility and conflict between people. Understanding thinking styles helps a person to know why some activities are appropriate for them and others are inappropriate. Therefore, different educational levels and different curriculum areas require different thinking styles. A subject that can cause better or weaker performance during educational or work periods. Thinking styles do not express a set of abilities, but they can express priorities to some extent. This clarity is important because abilities and priorities may or may not match. Failures and successes attributed to abilities are often caused by styles.

People with a holistic thinking style pay attention to the overall picture of the subject and focus on abstract beliefs. On the other hand, people with a detailed thinking style enjoy doing assignments that allow them to work on the special and main aspects of a subject and their objective details. People with an introverted thinking style enjoy doing tasks that they can do independently. On the other hand, people with an external style prefer tasks that allow them to interact with others. Free-thinking people enjoy doing tasks that are new and ambiguous. While people with a conservative style tend to follow the existing rules and methods in doing homework. In general, the approach of people's thinking styles is effective on their performance.

Also, the fifth hypothesis can be argued in such a way that the judgment of accountants and their type of decision-making is effective in securing the interests of the organization's stakeholders and observing justice and fairness in their reports, and according to the national and international research, it was found that different variables of demographic characteristics (age, gender, education and marital status) have an effect on the relationship between thinking styles and the auditor's objective.

This part of the research is in line with the research of Hongdizi et al. [21], Adili et al. [2].

Other research also confirms that the thinking styles of men and women are different, because certain styles may be encouraged or punished in men and women. Or people with different educational levels have different thinking

styles, which makes people different from each other due to the type of education and other factors affecting thinking styles. In research, the type of thinking style of single and married people is different, so that people after marriage sometimes find different thinking styles due to the social and cultural effects of marriage. Finally, different age groups have different types of thinking styles, and thinking styles often become conservative with age.

The results of this part of the research are in line with the research of El-Sayed et al. [12] and Rahnamai Roodpashti et al. [30].

5.1 Practical suggestions

- Taking people's thinking styles into account in finding jobs and training people based on their thinking styles.
- Considering the predictive power of thinking styles in career development, paying attention to the fact that thinking styles are generally environmental variables and not traits, by teaching the better use of thinking styles, they can be used to increase the orientation and progress of employees.
- The type of thinking style predicts people's responsibility; therefore, in selecting people for sensitive jobs, the type of thinking style of people should be recognized correctly.

5.2 Suggestions for future research

- Investigating the relationship between auditors' and financial managers' thinking styles and company strategies.
- Investigating the relationship between managers' transformational leadership style and their thinking style with the mediation of managers' knowledge and awareness.
- Examining the influence of auditors' thinking styles on financial transparency in companies and social responsibility of companies.

6 Research limitations

- Since other factors are involved in addition to the thinking style of the auditors' objectivity, it is necessary to consider other factors.
- This study was conducted on a small community in the city of Tehran, which needs additional scrutiny and investigations to be generalizable to other communities.

References

[1] A.Z. Abdullahi, E.B. Anarfo, and H. Anyigba, *The impact of leadership style on organizational citizenship behavior: does leaders' emotional intelligence play a moderating role?*, J. Manag. Dev. **39** (2020), no. 9/10, 963–987.

[2] M. Adili, A. Khodamipour, and O. Pourheidari, *Investigation the effect of audit firm's ethical culture and auditors personality types on auditor objectivity*, J. Account. Audit. Res. **12** (2020), no. 46, 5–20. [In Persian]

[3] B. Akanji, C. Mordi, A. Ituma, T.A. Adisa, and H. Ajonbadi, *The influence of organisational culture on leadership style in higher education institutions*, Person. Rev. **49** (2020), no. 3, 709–732.

[4] S. Armstrong and S. Cools, *Cognitive styles and their relevance for business and management*, In: L.F. Zhang and R.J. Sternberg (Eds.), Perspective on the nature of intellectual Styles, New York: Springer, 2009, pp. 253–290.

[5] C. Arslanoglu, E. Dogan, and K. Acar, *Investigation of decision making and thinking styles of volleyball referees in terms of some variables*, J. Educ. Train. Stud. **6** (2018), no. 10, 21–28.

[6] B. Badpa, O. Pourheidari, and A. Khodamipour, *Investigating the effect of the transformational client leadership on auditor's judgment and the mediating role of client identification*, J. Account. Adv. **11** (2018), no. 1, 29–67.

[7] J. Bakhtiari, Z. Poorzmani, and R.A. Royaee, *Guanxi and auditor's independence: Social connections theory test*, Knowledge Account. Manage. Audit, **8** (2018), no. 30, 27–40. [In Persian]

[8] N. Bashirimenesh and H. Nejati Mousavi, *The effect of auditors' personality characteristics on the perception of social responsibility and job satisfaction*, J. Account. Audit. Stud. **11** (2022), no. 44, 91–112. [In Persian]

[9] M.L. Cooper, M.E. Knight, M.L. Frazier, and D.W. Law, *Conflict management style and exhaustion in public accounting*, Manag. Audit. J. **34** (2019), no. 2, 118–141.

[10] L.O. Dal Mas and K. Barac, *The influence of the chief audit executive's leadership style on factors related to internal audit effectiveness*, Manag. Audit. J. **33** (2018), no. 8/9, 807–835.

[11] N. Dazeh and M. Gerkaz, *Relationship between moral reasoning, moral thinking, moral intention and moral Inclination among formal accountant*, Ethics Sci. Technol. **10** (2014), no. 1, 115–136. [In Persian]

[12] D.H. El-Sayed, E. Adel, O. Elmougy, N. Fawzy, N. Hatem, and F. Elhakey, *The influence of narrative disclosure readability, information ordering and graphical representations on non-professional investors' judgment: Evidence from an emerging market*, J. Appl. Account. Res. **22** (2021), no. 1, 138–167.

[13] C. Fornell and D.F. Larcker, *Evaluating structural equation models with unobservable variables and measurement error*, J. Market. Res. **18** (1981), no. 1, 39–50.

[14] L.R. Fuller and T.J. Shawver, *Will cognitive style impact whistleblowing intentions?*, C.R. Baker (Ed.), Research on professional responsibility and ethics in accounting (research on professional responsibility and ethics in accounting), Emerald Publishing Limited, Bingley, Vol. 23, 2020, pp. 47–62.

[15] H. Geravand, *Modeling the mediating role of thinking styles in the causal relationship of perception of parenting styles and motivational orientations*, Family Stud. **18** (2022), no. 1, 97–119. [In Persian]

[16] B. Ghadimi, B. Banimahd, and H. Nikoomaram, *Individual moods, critical thinking and fraud risk assessment in auditing*, J. Manag. Account. Audit. Knowledge, **11** (2022), no. 41, 315–323. [In Persian]

[17] S.M. Golshaeian, M. Sadat Ghafari, and S.M. Seyyedi, *Investigating the impact of social pressures, commitment and personality traits on the judgment of auditors*, J. Account. Manag. Persp. **3** (2019), no. 23, 99–117. [In Persian]

[18] M. Haider and H. Nikoumram, *Thinking styles and professional skepticism in auditing (Theory of mental self-government)*, J. Value Behav. Account. **3** (2017), no. 5, 151–185. [In Persian]

[19] M. Haider, F. Rahnamay Roodpashti H. Nikoumaram, and B. Banimahd, *Gender auditor and functional styles of thinking: The test of self-governing theory of mind*, Knowledge Account. Manage. Audit, **7** (2017), no. 25, 1–10. [In Persian]

[20] Y. Hassas Yaganeh and V. Jafari, *Investigating the effect of rotation of audit firms on the quality of audit reports of companies accepted in the Tehran Stock Exchange*, J. Secur. Exchange **3** (2010), no. 9, 25–42. [In Persian]

[21] J. Hongdizi, Y.-X. Cui, X. Zhou, and H.-K. Zhai, *Influence of analytic processing on divergent and convergent thinking tasks: the role of rational and experiential thinking styles*, J. Intell. **11** (2023), no. 2, 23.

[22] J.-A. Johannessen, *Appendix 1: Strategies, methods and techniques for thinking creatively*, J.-A. Johannessen (Ed.), Consciousness and creativity in artificial intelligence, Emerald Publishing Limited, Bingley, 2023, pp. 89–117.

[23] C. Ma-Kellams, *Cultural variation and similarities in cognitive thinking styles versus judgment biases: A review of environmental factors and evolutionary forces*, Rev. Gen. Psycho.**24** (2020), no. 3, 238–253.

[24] K. Mahdavian Rad, A. Zabihi, and K. Faghani Makarani, *Thinking style and documentation style of independent auditors and its relationship with decision making style*, Behav. Stud. Manage. **12** (2021), no. 26, 87–103. [In Persian]

[25] T.G. Manyak and I.W. Katono, *Conflict management style in Uganda: A gender perspective*, Gender Manag.: Int. J. **25** (2010), no. 6, 509–521.

[26] M. Mariya, H. Nikoumaram, and M.H. Khan Mohammadi, *The effect of organizational culture on organizational malpractice reporting in the auditing profession*, Financ. Account. Audit. Res. **12** (2019), no. 46, 27–50.

[27] S. Mohsenin and M. Esfidani, *Structural Equations Based on Partial Least Squares Approach Using Smart-PLS Software: Educational and Practical*, Mehraban Publishing Institute, 2013. [In Persian]

[28] R. Nemati Koshtali, M. Hamidian, S.M. Jafari, and M. Sarraf, *The effect of auditors' cognitive styles on fraud risk assessment (testing Grigorek's energetic theory)*, J. Value Behav. Account. **5** (2019), no. 9, 1–33. [In Persian]

[29] S. Peikarnegar Qalehroudkhani, B. Banimahd, S. Kheradyar, and H. Vakilifard, *Thinking style's and objectivity*

of the auditor, J. Manag. Account. Audit. Knowledge **9** (2019), no. 35, 69–82. [In Persian]

[30] F. Rahnamay Roodpashti, H. Vakilifard, F. Lak, and A. Mohseni, *Auditor style and comparability of financial statements*, Manag. Account. **8** (2014), no. 25, 29–47. [In Persian]

[31] R. Rashidi and G. Gol Mohammadnejad Bahrami, *Investigating the relationship between thinking styles and learning styles with goal orientation of female students in the second year of high schools in Tabriz*, J. Women Family Stud. **10** (2017), no. 38. [In Persian]

[32] C. Rigg and J. Sparrow, *Gender, diversity and working styles*, Women Manag. Rev. **9** (1994), no. 1, 9–16.

[33] M. Saeidi Goraghani and A. Nasseri, *Individual differences and auditor's professional judgment*, Financ. Account. Audit Res. **9** (2018), no. 36, 111–129.

[34] S. Saha and R.R.K. Sharma, *The impact of personality and cognitive style of managers on their work types*, J. Manag. Dev. **38** (2019), no. 1, 58–71.

[35] I. Salo and C.M. Allwood, *Decision-making styles, stress and gender among investigators*, Policing: Int. J. **34** (2011), no. 1, 97–119.

[36] M. Shahsavari, M. Abbaszadeh, and H. Hessari, *The tone used in the auditor's report and the auditor's fee, emphasizing the moderating role of the requirements of the auditing standard No. 700*, Empir. Stud. Financ. Account. **19** (2022), no. 76, 131–160. [In Persian]

[37] R.J. Sternberg, *Mental self-government: A theory of intellectual styles and their development*, Human Dev. 31 (1988), no. 4, 197–224.

[38] J. Svanberg, P. Öhman, and P.E. Neidermeyer, *Auditor objectivity as a function of auditor negotiation self-efficacy beliefs*, Adv. Account. **44** (2019), 121–131.

[39] F. Takeda, *Employing string similarity metrics of partners to estimate audit team continuity: determinant and its effects on audit outcomes and pricing*, J. Account. Liter. **45** (2023), no. 2, 314–339.

[40] M. Tenenhaus, V.E. Vinzi, Y.-M. Chatelin, and C. Lauro, *PLS path modeling*, Comput. Stat. Data Anal. **48** (2005), no. 1, 159–205.

[41] O. Turetken, S. Jethefer and B. Ozkan, *Internal audit effectiveness: operationalization and influencing factors*, Manag. Audit. J. **35** (2020), no. 2, 238–271.

[42] K. Vengopal and K. Mridula, *Styles of learning and thinking*, J. Indian Acad. Appl. Psychology, **33** (2009), no. 1, 111–118.

[43] M. Wetzels, G. Odekerken-Schröder and C. Van Oppen, *Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration*, MIS Quart. **33** (2009), no. 1, 177–195.

[44] R. Zamani and G. Mahdavi, *The impact of leadership styles considerations and structure and organizational position on the professional commitment of auditors*, Health Account. **9** (2019), no. 1, 21–40. [In Persian]