

Ethical decision making model of certified public accountants based on anticipated regret

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Abstract

Ethics is vital for the acceptance of any profession in society. Various factors affect certified public accountants' decisions. Most people feel regret when they realize a different decision could have led to a better outcome. So not only the outcome of the current decision is important to them, but also the outcome they could have achieved if they had made a different decision. Therefore, the present study introduces an ethical model for certified public accountants based on the anticipated regret. Therefore, this study investigates influential dimensions and qualitative items on the ethical decision of certified public accountants based on anticipated regret. The statistical population includes two groups of experts: theorizing experts (i.e. university professors), and experienced experts (i.e. certified public accountants). Descriptive and inferential statistical methods are used to test the research hypotheses. In order to answer the main question of the research, first, the research items are identified using the fuzzy Delphi method and based on previous research on professional ethics, accounting and financial issues. The SEM method is used to measure the relationships between the research items and after the final data fit, the ethical decision-making model of certified public accountants based on anticipated regret is presented.

Keywords: Ethical decision making, Anticipated regret, Certified public accountants
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1 Introduction

Regret is a powerful emotion. The regret theory is a famous theory that is used to some extent as an alternative to the expected return theory. This theory states that people in their decision making, in addition to worrying about the outcome of their decision and the expected return are also concerned with the different choices they could have. This theory has a simple structure with many variations and is psychologically justified as human being naturally dislike regretting [9].

When making a decision, we must consider the issue from all angles and consider the possible consequences. Many people think about the worst possible outcome when making a decision and how they feel about the outcome. As a result, they weigh their possible feelings of regret and usually choose an option that minimizes their regret, even if it is not optimal [5].

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The nature of auditing profession requires making decisions. Any profession in society requires acting within the framework of professional and social ethics and the auditing profession is no exception and auditors should be ethical in their decisions. Kohlberg as a psychologist in his model, which influenced by Piaget, combines ethical psychology with perceptual psychology and offers six stages of perceptual development and like a ladder presents perceptual and moral development in three levels: pre-contractual, contractual and post-contractual. These three levels define three different types of relationships between themselves, social rules and social expectations. Although the above six stages have a fixed sequence and occur one after the other, environmental and cultural factors can be effective in accelerating or delaying moral growth [13].

Ethical decision making models are focused on individuals' cognitive thinking and have a cognitive decision making process that appears sequentially. They use factors affecting individual cognitive analysis (e.g. moral values, thinking, knowledge), organizational environment factors (e.g. people including colleagues and superiors) and opportunities created for doing moral behavior (e.g. rewards and ethical regulations). For example, Rost explains in his model how various cognitive structures and the moral decision-making processes combine to create one's moral behavior [7]. He points to four major internal components of the moral decision-making process: moral sensitivity, the ability to reason to find the desired solution, moral motivation, and individual personality traits. Other scholars offer a different theoretical framework for making ethical decisions. They emphasize on the perceptual perspective and agree with Piaget's theory that individual learning or in other words perceptual development is a necessary precondition for moral reasoning.

The literature review shows that religious beliefs and personality traits of accountants and society and the profession type are influential factors on ethical decision making. To find these factors, researchers usually provide theoretical models based on their findings and use it to justify the accountants' ethical decision-making process. Nowadays, the role of attitudes and ethical factors of individuals and psychology of financial markets has received much attention in financial studies. Accordingly, the present study seeks to introduce ethical and psychological theories that are used in the auditing field and this way to provide a better understanding of the ethical behaviors of certified public accountants and explain the issue. This study investigates the relationship between a set of individual, behavioral, organizational variables and ethical intensity variables with the ethical decisions of certified public accountants in a proposed model. Therefore, the present study seeks to find empirical evidence to answer the main research question: what are the dimensions and qualitative items affecting decisions of certified public accountants based on anticipated regret?

2 Theoretical foundations and literature

Many behavioral science studies have shown that there is a relationship between individuals expected emotions in the future and their current decisions. For example, Clausi et al. [2] state that anticipated regret can motivate people to do the right thing in the present. Given impact of anticipated regret in individuals' current decisions, it can theoretically be inferred that anticipated regret of auditors can affect their decisions in the present time. In other words, prospective auditors who pay attention to their future feelings, try to make their current decisions in accordance with ethical principles and standards to avoid future regret. Hence, it is theoretically inferred that anticipated regret is one of the factors affecting auditors' ethical decision making at the present time. The above argument is based on the assumption that emotions are an important part of decision making [11].

Decision making points out to the cognitive processes that lead to the choice of an action among alternative actions. Decision making is defined in two types: descriptive and prescriptive [9]. Ethical decision making in the profession of certified public accountants, considering the position and opinion of auditors that is based on judgment, is very important. Ethical decision making in auditing is a process the auditors use based on their ethics to determine the correctness or incorrectness of an issue that they should judge about and it has four steps: recognizing the ethical issue, moral judgment, moral intent, and moral behavior [13].

Ethical theories can provide a moderate and systematic approach to ethical problems and affect our practical judgments we need for decision making, because our judgments require knowledge and awareness that comes from theories. Ethical theories seek to establish a proper moral fit in organizations very quickly. Traditional ethical decision-making models assume that adding inaccessible options has no effect on choosing other available options [3].

Larkin [8] argues that in many cases, people think that their emotional reactions is in line with their normative beliefs. In other situations, people think that their emotional reactions are part of their lives. He believes that normative beliefs and expected emotions influence decisions. Gabryś et al. [6] examined effect of knowing managers' decisions and intentions on the ethical sensitivity of auditors and found that skilled auditors than semi-skilled ones

have more ethical sensitivity and that ethical sensitivity of semi-skilled auditors is affected by knowing managers' decisions and intentions. Craft [4] examined the role of factors affecting the ethical decision-making process. Based on Etzioni belief that emotion is an important factor for choosing between options, they presented 102 students with three scenarios of business-related problems and examined: (1) how they should solve the problem they are facing with and how they will solve it; and (2) how they will feel about choosing each option. [9] examined the relationship between the level of ethical reasoning and the skill level of auditors and found that auditors with high level of ethical reasoning are less engaged in manipulating interests of their owners and consider the interests of all stakeholders in their proceedings. [5] examined the cultural factors influencing the ethical decision making of accountants and auditors in Vietnam and found significant difference between the two groups of students and experts in terms of auditing and ethical decision making. This research also contributed to the theory of culture in particular and cultural interference in general in the field of accounting-auditing in Vietnam in the process of international integration.

Azizmzadeh et al. [1] examined the regret theory and used it to justify individuals' behavior in the games. They found most people felt regret when they realized that a different decision could have led to a better outcome, which is analyzable based on the regret theory. Moradi and Zakizadeh [10] examined the role of ethical management, internal audit performance and ethical tendencies on accounting performance and financial reporting and stated that ethical management and internal audit performance interact and affect doing unethical actions. In particular, they found that an accountant is less likely to perform an unethical act in the presence of strong ethical management and internal audit performance than in other circumstances. Rahmaninia and Yaghoubzadeh [12] examined the role of ethical management, internal audit performance and ethical tendencies on the accounting performance and financial reporting. Their results showed that individual characteristics of internal auditors is effective on the ethical decision making of internal auditors and can affect their decisions. Purposeful and mindful internal auditors are more concerned with ethical issues. Based on previous research and the theories presented in them, the present study examines the hypothesis that there is a significant relationship between dimensions of anticipated regret and ethical decision making of certified public accountants?

3 Methodology

The present study is survey in terms of purpose and proposes an ethical decision making model for certified public accountants under the conditions of limited choice in the financial market. It is quantitative-qualitative in terms of the implementation process, is applied in terms of the implementation result, is cross-sectional in terms of time dimension, in terms of execution logic is a mixed research (i.e. deductive-inductive). The research collects the required data and so it is library and field research. First, an initial questionnaire is prepared and given to 25 experts (including academics professors and senior accounting and auditing experts) to extract the key dimensions and items of the conceptual framework (model). After interviews based on the above questionnaire, some of the most important dimensions and key items of the conceptual framework (model) were extracted and used to compile the second (main) questionnaire. The second questionnaire then was presented to the respondents. The data and information of the questionnaire, which included 182 statistical samples, were entered into an Excel file and first the factors analyzed and then the main model of the research reviewed. Finally, the research hypotheses were tested. The structural equations method and PLS software were used to investigate and analyze the research hypotheses and determine accuracy of the research hypotheses and the significance of the obtained coefficients.

4 Data analysis

The statistical population of the research is consisted of certified public accountants, including partners working in auditing firms located in Tehran and Mashhad cities, and managers of the auditing organization. A sample of 182 respondents was selected from the mentioned population by the snowball sampling and non-random, which is a feature of this type of purposeful sampling. The sample members must have the following criteria:

1. Key and effective: they must be key and effective people in the auditing decision making process.
2. Identified by others: they must adhere to the code of professional conduct in the field of auditing, have professional reputation, and work in approved and ranked institutions.
3. Theoretical understanding of the subject: they must have sufficient mastery over the academic field and specialized accounting and auditing texts.
4. Diversity: they must have an active presence in auditing companies.
5. Desire to cooperate: they must have interest and truth of the speech.

The demographic characteristics of the participants are described in Table 1, which is studied and used to collect data.

Table 1: Demographic characteristics of the participants

Row	Demographic characteristics	Description	Description of the executive method
1	Gender	Female	Library study and semi-structured interview
		Man	
2	Education	Bachelors	Semi-structured interview
		Masters	Library study
		P.H.D	Semi-structured interview
3	Age	Under 35 years	Library study
		35-50 years	Semi-structured interview
		50-65 years	Library study
4	Related work experience in accounting and auditing	under 10 years old	Semi-structured interview
		10-20 years	Library study
		20-30 years	Semi-structured interview

4.1 Selecting key research criteria using fuzzy Delphi method

After interviewing based on the above questionnaire, some of the most important items and key dimensions of the conceptual model were extracted and then used in the second (main) questionnaire and distributed among the respondents. The data of the 107 questionnaire were entered into an Excel file. Therefore, in the first stage, the criterion was selected using fuzzy Delphi method and then entered into the PLS software to analyze the research hypotheses. Table 2 shows opinions of 25 experts about the importance degree of the sub-criteria and indicators with scores 1 to 10 for the pessimistic and optimistic answers, respectively. Table below presents the key research criteria in the field of ethical decision making of certified public accountants by using the fuzzy Delphi method. The simplest way to calculate a fuzzy mean is as a relation (4.1):

$$F_{AVE} = \frac{\sum l}{n}, \frac{\sum m}{n}, \frac{\sum u}{n} \tag{4.1}$$

One simple method to de-fuzzy the mean of triangular fuzzy numbers as equation (4.2) is:

$$Defuzzification = \frac{l + m + u}{3} \tag{4.2}$$

Table 2: Performance indicators based on fuzzy Delphi method (Threshold = 8.87)

Dimensions	Pessimistic		Optimistic		Geometric mean		Significance	Rank
	Min	Max	Min	Max	I_{m^i}	U_{m^i}		
Ethical decision making								
Personal characteristics	3	9	7	10	6.41	8.61	11.20	1
Rules and regulations	2	9	6	9	3.76	7.59	8.90	4
Audit firm characteristics	4	10	6	10	6.57	7.98	9.89	3
Political and economic conditions	1	6	3	9	2.29	5.42	3.31	5
Audit work conditions	1	9	7	10	5.05	8.67	11.03	2

The threshold value obtained from the mean column is a significant value (8.87). Therefore, the dimension of political and economic conditions whit the significant value of less than the threshold (8.87) will be removed. In addition, dimensions of personal characteristics, rules and regulations, audit firm characteristics, and audit work conditions, which their corresponding values are greater than threshold are selected. As a result, the key research criteria with respect to constraints on selections by using the fuzzy Delphi method are selected.

The threshold value obtained from the mean column is a significant value (8.49). Therefore, the dimension of education level out of the 5 existing dimensions with the significant value of less than the threshold (8.49) will be removed. In addition, dimensions of the membership history in the society of certified public accountants, creative personality, satisfaction with the decision, and result-oriented personality, which their corresponding values are greater than the threshold value (8.49), will be selected.

Table 3: Performance indicators based on the fuzzy Delphi method (Threshold = 8.49)

Dimensions	Pessimistic		Optimistic		Geometric mean		Significance	Rank
	Min	Max	Min	Max	I_{m^i}	U_{m^i}		
Ethical decision making								
History of membership in the society of certified public accountants	3	8	8	10	5.23	8.76	9.87	2
Creative personality	4	9	7	10	6.95	8.41	10.74	1
Education level	1	7	5	9	3.86	7.93	6.40	4
Satisfaction with the decision	3	9	6	10	4.55	8.42	9.86	3
Result-oriented personality	1	8	2	10	2.43	7.30	5.21	5

Table 4: Descriptive statistics of the research variables

Variables	Symbol	No. of observations	Min	Max	Mean		SD	Variance
			Statistic	Statistic	Statistic	Standard error	Statistic	Statistic
Ethical decision making	A	192	1.50	4.50	3.0940	0.04305	0.60264	0.363
Anticipated regret	B	192	31.2	89.3	2.8902	0.04665	0.67225	0.408

4.2 Testing the research hypotheses

Table 4 presents descriptive statistics of all the research variables in terms of statistical indicators.

For the ethical decision making (A) variable, the minimum, the maximum, the mean and the standard deviation of the comments are 1.50, 4.50, 3.0940 and 0.60263, in order. For the anticipated regret (B) variable, the minimum, the maximum, the mean and the standard deviation of the comments are 31.2, 89.3, 2.8902 and 0.67225, in order.

4.3 Statistical test of the research hypotheses

This section examines the research hypothesis and uses the PLS to assess the measurement model fit, the structural model fit, and the overall model fit.

4.3.1 Testing the measurement model fit

Reliability: In order to evaluate reliability of the research measurement model, factor loadings coefficients, Cronbach’s alpha coefficients and the composite reliability are examined. The observed operating loads are estimated based on the following formula:

$$F_j = \sum W_{ji}X_i = W_{j1}X_1 + W_{j2}X_2 + \dots + W_{jp}X_p \tag{4.3}$$

Examining factor loadings

Table 5: The factor loadings of coefficients

Factor	Indicator	Factor loadings
Ethical decision making of certified public accountants	A1	7.033
	A2	0.893
	A3	0.752
	B1	0.705
Anticipated regret	B2	0.630
	B3	0.943
	B4	0.677

The criterion value for the suitability of factor loadings coefficients is 0.4. In the table above, all the factor loadings coefficients of the questions are greater than 0.4, which indicates the appropriateness of this criterion.

Cronbach’s alpha and composite reliability

According to the data analysis algorithm in PLS, after measuring the factor loadings, it is time to calculate and report Cronbach’s alpha coefficients and composite reliability, the results of which are shown in the table below. The calculation of Cronbach’s alpha is based on the following formula that is calculated in the software:

$$\alpha = \left(\frac{K}{K-1} \right) \left(1 - \frac{\sum_{i=1}^k S_i^2}{S^2} \right) \tag{4.4}$$

In which we have:

K : is the number of items;

S^2 : is the variance of the sum of the scores of each respondent.

The calculation of the combined reliability is done as follows:

$$CR = \frac{(\sum \gamma_i)^2}{(\sum \gamma_i)^2 + (\sum \varepsilon_2)} \tag{4.5}$$

Table 6: Cronbach’s alpha and composite reliability results of the latent research variables

Latent variables	Symbol	Cronbach’s alpha coefficients (> 0.7)	Composite reliability coefficients (CR > 0.7)
Ethical decision making dimensions	A	0.844	0.876
Anticipated regret dimensions	B	0.820	0.862

Considering the suitable values of Cronbach’s alpha and composite reliability (0.7) and according to the findings of the above table, the suitable value of latent variables confirms the research reliability.

Convergent validity

The second criterion for examining the measurement models fit is convergent validity, which examines the correlation degree of each construct with the corresponding questions (indicators). The value of AVE for second-order variables is calculated using the formula:

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n} \tag{4.6}$$

Table 7: Convergent validity results of the latent variables

Latent variables	Symbol	AVE(> 0.5)
Ethical decision making dimensions	A	0.642
Anticipated regret dimensions	B	0.657

The AVE is equal to 0.05 and according to the findings of the table above, the latent variables have suitable value that confirms appropriateness of the convergent validity of the research.

4.3.2 Structural model fit

Significance coefficients (t-values)

According to the results obtained from the PLS, the t-coefficients for the research hypotheses is are than 1.96, which confirms their significance at the 95% confidence level.

R Squares (R^2)

The second criterion for examining the structural model fit in a research is R^2 coefficients for the endogenous (dependent) latent variables of the model, which indicates effect of an exogenous variable on an endogenous variable with three values of 0.19, 0.33 and 0.67 corresponding to weak, medium and strong values of R^2 , in order. Accordingly, values of R^2 for the endogenous constructs of the research indicate appropriateness of the structural model fit.

4.3.3 Overall model fit

The GOF criterion

Table 8: Results of R^2 for the endogenous constructs

Latent variables	Symbol	R^2
Ethical decision making dimensions	A	0.189
Anticipated regret dimensions	B	0.244

To evaluate the overall model fit, the goodness of fit (GOF) criterion with three values of 0.01, 0.25 and 0.36 for the weak, medium and strong states is used. This criterion is calculated using the following formula:

$$GOF = \sqrt{\overline{communalities} \times \overline{R^2}} \tag{4.7}$$

$\overline{communalities}$ is equal to the average of the shared values of the latent variables of the research.

Table 9: Communality rate and R^2 of the research variables

Latent variables	Symbol	Communality	R^2
Ethical decision making dimensions	A	0.630	0.199
Anticipated regret dimensions	B	0.533	0.661

Table 10: Results of the overall model fit

GOF	$\frac{dy}{dx}$	communality
0.059	0.324	0.561

The GOF value (0.059) confirms very good fit of the overall model.

Table 11: Results of direct relationship and significance coefficients of the research hypothesis

Hypothesis	Causal relationships between the research variables	Symbol	Coefficient β	(t-Value)	Result
	Anticipated regret \rightarrow Ethical decisions of certified public accountants	B—D	0.133	3.784	Confirmed

4.4 Results of the model fit and the research hypotheses

The research hypothesis are as follows.

H_0 : There is no significant relationship between anticipated regret and ethical decision making of certified public accountants.

H_1 : There is a significant relationship between anticipated regret and ethical decision making of certified public accountants.

The standardized coefficient (path coefficient) between the two variables (anticipated regret and ethical decision making of certified public accountants) is $\beta = 0.133$. The significance coefficient (t-statistic) between these two variables ($t = 3.874$) is greater than 1.96 and, which shows its significance. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed, indicating that there is a significant relationship between anticipated regret and ethical decision making of certified public accountants so that anticipated regret can affect ethical decision making of certified public accountants.

5 Discussion and conclusions

Decision-making like some other concepts in theoretically an artificial construct and a psychological concept of the interaction, commitment and action. Personality has an important role in decision making. Decision making is so intertwined with the psychological characteristics of the decision maker that one cannot offer and study one of them separately. From a psychological point of view, the study of the decision-making process should be done taking into account all the characteristics of the human decision-maker. The utility expected model is a behavioral and rational

model and states that people choose decision outcomes as a framework, thus, regret feeling related to a decision may influence decision-making.

Auditing is a vital profession in today's advanced world, because the current economic system cannot exist without it. Independent auditors' report validate accounting information and auditors can make reports on any audit work through decision making. Auditors, like those working in other professions, have special ethical responsibilities and in addition to being professional, must adhere to the ethical principles governing their profession. In other words, unethical behaviors leading to the financial failures and scandals could be prevented if an ethical culture to be established and auditors act more responsibly.

Therefore, this study examines possible factors that may influence ethical decisions of certified public accountants in Iran. The results of this study show that the concern of the Iranian certified public accountants' community about the role of ethical decisions of certified public accountants in achieving their professional goals is important. Results of the data analysis shows that the rules and regulations, the personality traits of the certified public accountant and characteristics of the audit work on the one hand and characteristics of the auditing organization on the other hand can affect the professional ethical decisions of the certified public accountants subject to the anticipated regret. The results of this study are in line with results of domestic and abroad researches and it can be concluded that individual characteristics of certified public accountants and the work environment characteristics help auditing firms to promote the ethical and professional decisions of certified public accountants and, on the other hand, improve the productivity of organizations and financial institutions. Finally, the results show that anticipated regret influences auditors' decisions.

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