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Presenting a Model for Social Responsibility of Audit Firms Using Grounded Theory Method

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Abstract

This study was aimed to present a model for social responsibility of audit firms using the grounded theory method. To this end, the components and dimensions of social responsibility model of audit firms were identified and explained. The research method was applied in terms of purpose, mixed (qualitative-quantitative) exploratory in terms of data type, and descriptive-correlational in terms of data collection time. The statistical population of the qualitative part of research included experts and managers of audit firms and top professors in auditing in the country, among whom, 30 people were selected as sample size using purposive sampling method and saturation principle. The second group of the statistical population included all financial and audit managers of Shasta subsidiary firmas, among whom 145 people were selected as sample using relative stratified random sampling method. The results showed that the model of social responsibility measurement in audit firms has five dimensions of causal conditions (audit firm size, audit quality, auditor's expertise, corporate size, audit fees and time budget), axial phenomena (trust, technical and comparability, willingness to invest, law-orientedness and business ethics), contextual conditions (internal controls, voluntary disclosure of financial statements, transparency of financial statements), intervening conditions (CEO's personality traits, accounting conservatism, and political considerations) and consequences (financial development, information validity, information quality, trust and social participation, and corruption).

Keywords: social responsibility, audit firms, financial development, financial information accreditation, anti-corruption.
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1. Introduction

Corporate social responsibility provides the ways in which organizations operate in their business spaces and meet the business, legal, ethical, and social expectations of the community. Because organizations have great social, economic, and environmental responsibilities to their employees, shareholders, customers, government, suppliers, and all beneficiaries. Undoubtedly, if the different individuals, groups, organizations, and institutions of society are responsible for the different events, happenings and crises, and try to solve the above crises within the limits of their responsibility and scope, many problems will be reduced and a healthy and peaceful society will be created. In other words, the organization influences society in any way it acts. Therefore, organizations must do things acceptable to society and in line with its values. Organizations failing to meet these conditions will not be successful in practice. In other words, organizations need to pay close attention to social responsibility in order to maintain or promote their place in the society in a way that keeps them alive and successful. Thus, the social responsibility of organizations is a key factor in the survival of any organization [12].

Corporate social responsibility has emerged in the concept of sustainable development in recent years and, due to the dominance of this concept in the competitive world, international organizations in Iran such as the United Nations Development Program (UNDP) have struggled to bring about it among the managers of Iraninan corporates in the form of Millennium Development Goals. Today in Iran, factors such as economic freedom and the competitiveness of some industries have led companies to pay attention to issues such as responsibility to employees, consumers and society, and to consider the interests of these stakeholders in their programs and activities. At present, this concept is very new in its current form as a concept and management process, and companies are often at the beginning of the road [7]. Moreover, on the one hand, the economic-industrial structure governing Iran's economic-political environment is such that companies not only consider social responsibility activities to be a cost but also competitive, and on the other hand, many companies do not consider the minimum rights of employees and consumers, and state-owned companies do not also respect the rights of shareholders and owners. Here the role of auditing becomes important, given that it has a wide range of audit tools in companies' financial statements, and can promote companies to meet these minimums as one of their social responsibilities along with other social responsibilities common with other commercial companies [4].

In the last years of the twentieth century and on the eve of the twenty-first century, the bankruptcy of large companies such as Enron, Wordcom, Adelfi, Cisco, Lucent, and Xerox caused the financial reporting system to face a crisis. The bankruptcy of such companies has pointed the finger of blame at accounting and financial reporting such that these events have been referred to as an audit scandal in many cases. But this was not the end of the matter. Instead, the financial reporting system, due to its lack of credibility, always faced crises in gaining public trust [1]. Increase in fraud, along with the bankruptcy of large corporations, raised some concerns about the quality of financial reports. In this regard, the accounting and auditing profession saught to find solutions to this problem. Changing the approach of developing accounting standards from rule-based to principle-based standards, emphasizing auditors' independence and corporate governance to protect the interests of minority shareholders, and regulating the disciplinary regulations of the accounting and auditing profession were among the measures taken to gain public trust. On the other hand, academics and thinkers, in their turn, changed the direction of empirical research to the quality of financial reporting and its effects on the capital market so that they can play a useful role in this regard [11].

Janin and Piot [14] believe that one of the social responsibilities of auditing can be to prevent

and reduce earnings management. Because it is urged that corporates providing audited financial statements have higher quality information and profit. Accruals depend on the judgments of managers, and it is more difficult to audit companies with more accruals. Higher quality auditing is more likely to detect suspected accounting practices. Because high quality audit firms have more expertise, resources, and incentives to detect mistakes and fraud.

On the other hand, considering that the auditors' goal is to protect the interests of shareholders against important distortions and errors in the financial statements, auditors are seeking to increase the quality of the audit in order to fulfill their social responsibility, maintain the credibility of their profession and professional reputation, and avoid from lawsuits against themselves. Meanwhile, managers' motivations to pursue their personal interests in earnings prevent auditors from achieving their goals. In contrast, by increasing the quality of their audit, auditors can discover the earnings management by managers and put managers under pressure to apply earnings management [2].

Exercising audit responsibilities reduces the damage caused by information asymmetry and agency problems in companies' financial incapacity and earnings management. Accounting quality also makes financial information transparent and reliable. Based on the theoretical foundations, it can be stated that corporate social responsibility is considered to be responsive to the needs of society and its stakeholders, which can be effective in attracting institutional investors [17].

The role of auditing in accreditation of corporate earnings information following the restatement of corporate earnings has become significant and can be considered as a social and moral responsibility of companies. Differences in audit quality manifest themselves as differences in the credit provided by auditors and the quality of their employer's earnings. Therefore, intentional or unintentional mistakes of auditors can eventually lead to irreparable damage to investment and public trust in investment and financial statements [2]. Hence, given the above, in the present study, we seek to answer the question of what are the indices and components of social responsibility of audit firms (axial phenomenon) and which model can be presented to measure the social responsibility of audit firms?

2. Theoretical foundations and literature review

2.1. Definition of corporate social responsibility (CSR)

Corporate social responsibility defines the ways in which organizations and businesses must act to meet people's business, legal, and ethical and social expectations. In other words, business organizations must undergo cultural changes and an effective mindset shift in order to take social, economic, and environmental responsibility for their employees, shareholders, and beneficiaries [8].

Corporate social responsibility is a transcendent approach to business that considers the social impact of an organization on society, both internally and externally. The main purpose of the CSR is to bring together all sectors (public, private, and volunteers) to work together to bring together economic and environmental benefits and to lead to business success, growth, and sustainability [8].

Business dependence on corporate social responsibility is economic in proportion to the type of business and unit size, but in terms of the benefits and value created by corporate social responsibility for business and organization, using it in different sizes of the economic unit is necessary [5].

Companies and organizations accepting the governance and standards of corporate social responsibility seriously and acting accordingly will see the success and promotion of their financial performance. They also can gain the trust of people and market in their products, and reduce the arbitrary and undesirable decision-making, and avoidance of individual responsibility [5].

Corporate social responsibility is not limited to big businesses and making them more profitable, but it does not ignore the problems and challenges of small and medium enterprises and includes

the organizational behavior of all companies and organizations. Corporate social responsibility is working to establish the world's most knowledge-based dynamic economy in the next few years. In general, the more sensitive and knowledgeable the big companies become about their ethical and environmental principles, the more persistent the smaller companies will become in their interaction and follow-up, thereby gaining the trust of customers and society [8].

2.2. Financial accounting theories and corporate social responsibility

The recent global financial crisis is a wake-up call for a fundamental review of research in all areas of business and economics, including accounting research. The gap between the methodology of academic accounting research and the theoretical weakness to understand the relationship between accounting and the political economy environment led to suggestions for changing patterns and research pathways to help understand and recognize accounting in response to crises and problems in the political and economic environment. Examining the trend of accounting theory in academic research can clearly show the change of accounting research content and the strength of the theoretical foundations used in it. In summary, it can be said that there have been two lines of thought in academic accounting research: the first line of thought contributes to the development of accounting theory, and the second line of thought, with the informational perspective of accounting in the empirical developments under the title of the positive research. In this paper, the identification of financial accounting theory in reporting studies and disclosure of corporate social responsibility with the approach of political economy theory and positive attitude is considered in order to analyze the usefulness of these theories in this category. Several studies have examined the classification of paradigms. For example, Belkaoui (2000) identified six classes of research paradigms and considered accounting as a science with a multiple paradigm. Scott (2016) also made a classification of financial accounting theories, and in his view accounting has a multiple paradigm in accounting research. Watts and Zimmerman's studies, and in particular positive accounting theory are examples of the paradigm of inductive theories. Since the second half of the 20th century, there has been a long debate about corporate social responsibility. In 1953, Bowen wrote Taking Commercial Social Responsibility, and then the concept shifted from business social responsibility to corporate social responsibility. This issue has been considered in such a way that many attitudes, theories and concepts have been formed for it today. Gary (1995), in classifying environmental and social disclosure studies of companies, divides them theoretically into three categories:

1. Studies based on the usefulness in decision-making theory
2. Studies based on the economic theory
3. Studies based on the social and political theory

Gary (1995) stated that studies based on the usefulness of decision-making theory lack theoretical support and argued that the discrepancy between a company's non-financial incentives to engage in corporate social responsibility and the needs of key stakeholders, mostly financial ones, is a major problem and makes proving usefulness to financial stakeholders unjustifiable. So being useful for decision-making is not essentially and really about a particular theory, and this group of studies on corporate social responsibility lacks theory. In other words, it can be said that the application of theory in this group of studies is clear, but it can be considered as a separate methodological branch, and in short, studies show that the application of theory may be possible; However, the application of theories with an economic approach contradicts the corporate social responsibility. Corporate social responsibility studies have been based on the economic theory in the field of agency theory

and positive accounting theory research. According to Gray (1995), there is no need to analyze this group of research on corporate social responsibility, because these theories are completely opposed to the approach of the benefits of social disclosure and the main concern of this set of theories is free market thinking from the economic perspective that believes in the failure of the market if it pays attention to the corporate social responsibility in society and that considering the short-term economic benefits through rational behavior in the economy is completely in contrast with the motivations of exercising corporate social responsibility. In general, corporate social responsibility theories focus on the phenomenon of how to balance the business unit with society. To classify the theories, it is assumed that most of the relevant suggestions and attitudes emphasize the aspect of social reality and the following assumptions [13].

1. Adaptability and environmental acceptance
2. Achieving goals
3. Social integrity and pattern retention

These assumptions lead to the classification of corporate social responsibility theories into four groups [19]:

- Instrumental theories
- Integrated theories
- Political theories
- Moral theories

2.3. Positive accounting theory and corporate social responsibility

In general, the purpose of theorizing is to review, describe, explain, and predict, and the topics of accounting research can be as the relationship between the economic activities of an institution and the information recorded and reported about those activities. This research forms the basis of positive accounting theory, which is based on the theory of rational choice. In other words, the personal benefit which is called opportunistic behavior is the basis of all economic activities and the reason for choosing accounting methods [3].

The most important advantage of positive theory is the discovery of regular patterns in the selection of accounting method and presentation of the specific interpretations for such patterns. On the other hand, theory can be examined in both normative and positive dimensions. Normative theory expresses what it should be, while positive theory expresses what it is. In developing normative theory, deductive reasoning is used, but positive accounting theory is based on inductive reasoning. In fact, positive accounting theory seeks to discover the laws and relationships between financial phenomena, and to develop theories and ideas capable of describing the phenomena and events of the real world [3].

A review of the writings of positive accounting theory shows three main hypotheses [15]:

1. Bonus plan hypothesis
2. Debt hypothesis
3. The political size or cost hypothesis

Since some studies have used positive accounting theory as their theoritical basis in corporate social responsibility.

Watts and Zimmerman assumed that the actions of individuals are to maximize their own utility, and that, naturally, the management lobby in the process of setting standards is based on personal interests. An important part has been how accounting standards affect management wealth. Typically, managers have a strong incentive for lobbying to develop standards leading to increase in the reported profits and thus increase in their own wealth. Of course, managers need to keep in mind that reported profits may be able to impose costs on the company, including political costs [16].

The fundamental question is which of the above hypotheses is compatible with corporate social responsibility, and to understand it in particular, we examine the hypothesis of political size or cost, which expresses the concept of political pressure on corporations. The hypothesis of political cost or size states that large companies, compared to the smaller companies, choose accounting methods that transfer profits from the present to the future. According to this hypothesis, assuming other conditions are fixed, "the larger the company, the more likely it is that its managers choose accounting procedures transferring profits of current period to future periods." According to this hypothesis, political forces can influence the redistribution of corporate wealth through tax laws, regulations, and so on. Thus, specific groups are motivated to lobby for regulations in an industry or company through politicians for their own purposes. Watts and Zimmerman's main concern is that large corporations have the exclusive power to potentially abuse public resources, and this is exactly the concept of political cost [18].

In fact, political cost means that politicians put pressure on large, high-profit companies, and they will have the exclusive power to abuse in their actions and activities through lobbying. So corporate managers are motivated to choose accounting practices reducing the net profit reported in the financial statements through lobbying with politicians. The interpretation of this argument would be that the emphasis of political cost is on companies with high profitability, and therefore political cost is one of the functions of reported profits. Therefore, it provides an incentive to manage the reported accounting figures. In general, the activity of companies in non-market areas, especially for lobbying with governments, regulators, legislators and official public institutions is in their own interests [3].

Along with various theories to explain why companies do social responsibility reporting voluntarily, including usefulness of decision-making theory, legitimacy theory, stakeholder theory, and political economics theory, positive accounting theory, and political cost hypothesis have been proposed. Based on a preliminary study by Watts and Zimmermann, several empirical studies have been conducted directly to establish evidence for political cost hypothesis as an explanation and justification for corporate behavior and social disclosure. Gary urged that some empirical studies have shown a strong relationship between disclosure, company size, and industry type. In fact, the relationship between disclosure and industry type is empirically obvious. Such results claim that positive accounting theory is desirable in supporting the theory of legitimacy. If positive accounting theory is rejected as a basis for justifying why companies participate in social disclosure, then it is necessary to further examine the empirical debates and evidence that took place during that period (Rahimi, 2015).

3. Research methodology

Since the present study is aimed at presenting a model for measuring social responsibility in audit firms, the combined or mixed research method is used by combining qualitative and quantitative methods. The research method is qualitative in terms of data nature, library-field type in

terms of environmental dimension, applied in terms of purpose, cross-sectional in terms of time, and descriptive-survey in terms of method of conducting research.

3.1. Statistical population of qualitative part

The statistical population of the qualitative part of the research included experts and managers of audit firms and top professors in the field of accounting and auditing in the country. The sampling method in this part was goal-oriented. In this study, 30 people were considered as interviewees because no new codes were added after the interview with these 30 people and the sample size was saturated. It is worth noting that the interview process took place in the first six months of 2019.

3.2. Statistical population of quanitative part

The statistical population of the present study in the quantitative section included all financial and auditing managers of Shasta subsidiary companies, whose number is over 230 people. For selecting statistical samples, the relative stratified random sampling method was used and the sample size was determined 145 people using the Cochrane-Orcutt formula. The main formula for calculating the size of the Cochran sample is as follows:

$$n = \frac{\frac{Z^2pq}{d^2}}{1 + \frac{1}{N}\left(\frac{Z^2pq}{d^2} - 1\right)}$$

n: Statistical sample size
N: The size of the statistical population
d: Permitted error (usually considered to be 0.05)
z: The value of the normal variable with confidence level $\alpha - 1$. In the two-tailed test, the value of z for the 95% confidence level is 1.96 and for the 99% confidence level 2.58.
p: The ratio of having the desired attribute (for example, male population)
q = (1-p): The ratio of the absence of the desired attribute (for example, the female population). Usually p and q are considered to be 0.5.

3.3. Data collection tools and reliability and validity

In this study, library method, semi-structured interview and questionnaire were used to collect data.

Qualitative part: In the qualitative part of this study, semi-constructed interviews were used. In individual interviews with interviewees, seven interview questions were used for preliminary review. In addition, there were other sub-questions along with each question to understand the participants' experiences during the interview. During the interview, the researcher asked the guiding questions to check the accuracy of his / her interpretation of the interviewees' statements. In the sampling process, the researcher analyzed the data of the participants to complete the incomplete items by receiving new information from the new participant. After 30 interviews, the main and secondary factors in the previous interviews were repeated and the researcher was saturated. During the interview, opinions on the appropriate indicators for the model of measuring the social responsibility of audit firms were collected, and the main and secondary factors were examined and finalized. The interview lasted between 30 and 60 minutes.

In order to ensure the validity of the qualitative part of the research and to ensure the accuracy of the findings from the researcher's point of view, the valuable opinions of professors familiar with this field and experts in the field of social responsibility and auditing were used. At the same time, participants also assisted in data analysis and interpretation. Inter coder reliability (ICR)

was also used to calculate the reliability. In an interview with inter-coder agreement, management and auditing professors familiar with coding were asked to participate in the research as secondary coders. Then, researcher, along with the research colleagues, coded three interviews and calculated the percentage of inter-coder agreement as an indicator of reliability. Inter coder reliability (ICR) was obtained according to the calculations below 75.1%, indicating the appropriate reliability. Content analysis was used to analyze qualitative data. In this design, the steps of qualitative data analysis are open coding and axial coding.

Quantitative part: In this study, in order to collect data, a researcher-made questionnaire based on interview codes was used, which was completed with a survey of managers of Shasta companies. The questionnaire items of this study include two parts:

A) General items: In general items, the purpose is to obtain general and demographic information of the respondents. This part includes four items about gender, age, education, and work experience.

B) Researcher- made questionnaires

Specialized items: This part contains 102 closed items. In designing this part, an attempt has been made to make the questionnaire items as clear as possible to the respondents. These items are of the closed type and 5-point Likert scale. It should be noted that at the time of the administration of the questionnaire, the researcher was present at the site and verbally clarified the ambiguities for the subjects in order to clarify the content of the questionnaire. Table 1 lists the information related to the questionnaire.

In order to increase the validity of the research, attempts were made to design interview questions related to the subject, and for this purpose, academic experts were used; Also, in this research, face and content validity methods have been used to confirm the validity of the questionnaire such that the research questionnaire, which was based on the results of interview with 30 experts, was provided to supervisors and advisors, and its face and content validity were confirmed.

Since the questionnaire is designed as a Likert scale and is of the attitude-measuring type, Cronbach's alpha coefficient is therefore the most appropriate method for calculating validity. Cronbach's alpha values of the research components obtained to evaluate the reliability of the measurement tool were for the pretest (N=30) as well as the post-test reliability (N=145). The results of the validity and reliability study showed that the Cronbach's alpha coefficient calculated for all factors affecting the social responsibility measurement model of audit firms in the pre-test and post- test was above 0.7. Therefore, it can be concluded that the questionnaire used had the necessary reliability. The formula for calculating Cronbach's alpha is as follows:

Where k is the number of items, S^2 is the variance of the sum of the scores of each respondent, and S_i^2 is the variance of the scores for ith item.

3.4. Data analysis method

Qualitative: Content analysis was used to analyze qualitative research data. In this plan, the steps of qualitative data analysis collected are performed through open coding, axial coding and selective coding.

Quantitative: In the quantitative part, descriptive and inferential statistical methods were used according to the research questions. In the descriptive part for demographic variables whose data were obtained from the questionnaire, the mean, standard deviation, frequency distribution tables and graph for each of the variables were presented using SPSS software.

In the inferential part, the research hypotheses were tested using SPSS software as well as Lisrel. The results of Lisrel software were used in the form of structural equation modeling method.

Table 1: Cronbach's alpha value of the research variables

Post-test Cronbach's alpha	Pre-test Cronbach's alpha	Number of items	Component
0.812	0.820	3	Trust
0.862	0.863	3	Technical and comparablility
0.753	0.750	3	The willingness to invest
0.790	0.766	3	Law-orientedness
0.811	0.800	6	Business ethics
0.859	0.861	3	The size of the audit firm
0.781	0.783	3	Audit quality
0.858	0.859	3	Auditor's expertise
0.715	0.715	4	The size of the audited company
0.811	0.816	3	Audit fee
0.719	0.720	3	Audit time budget
0.844	0.745	4	Financial development
0.912	0.905	3	Information validity
0.793	0.790	3	Information quality
0.885	0.881	3	Social trust and participation
0.867	0.866	5	Corruption
0.799	0.800	6	Internal controls of companies
0.800	0.800	6	Voluntary disclosure of financial statements
0.714	0.715	6	Transparency of financial statements
0.744	0.745	7	Personality traits of corporate CEO
0.802	0.810	4	Accounting conservatism
0.736	0.739	6	Political considerations

4. Research findings

In this section, research data are analyzed and evaluated using scientific methods; But before analyzing the data, the pre-processing of the data was examined. The results showed that in some items, the missing values have occurred; Therefore, to solve this problem, the median method was used to place their values and all the missing data were replaced. In order to identify outliers, boxplot graph was used, showing that there were no outliers. In addition, in Excel software to eliminate indifferent people, the standard deviation of each subject was calculated in response to a questionnaire. The results showed that the standard deviation of the answer of each subject to the research questions is not less than 0.3 and therefore no subject was omitted.

Qualitative part

What are the components and indices of the social responsibility measurement model in audit firms?

It is worth mentioning that 30 experts in this field were interviewed based on a 7-item semi-structured interview. The interview questions are given in Table 2. The answers to each question after the content analysis by the researcher are given in Table 3.

Table 2: The interview items

Item	Row
What are the indices and components constituting the social responsibility of audit firms (axial phenomenon)?	1
What are the factors affecting the social responsibility of audit firms (causal conditions)?	2
What are the factors affected by the social responsibility of audit firms (consequences)?	3
What are the executive mechanisms (strategies) of social responsibility of audit firms?	4
What are the intervining factors (barriers) to implementing the social responsibility of audit firms?	5
What are the facilitators (platforms) for implementing the social responsibility of audit firms?	6
How is the current status of social responsibility of audit firms and the factors affecting it and affected by it?	7

After coding semantic units and reaching saturation (when new text or interview analysis does not yield new categories or codes), the codes were categorized according to similarity, and eventually 22 categories of qualitative data emerged. Finally, the components identified after adjustment supported by the literature are represented in Table 3.

Which model can be presented for the social responsibility of audit firms with the grounded theory approach?

Statistical description of demographic characteristics

The table below describes the demographic information as well as the variables of the research from the perspective of the indices of central tendency, dispersion and distribution shape.

The findings of the research in the descriptive statistics part (characteristics of participants), represented in the table above, showed that the highest age group is above 45 years old and the highest frequency of work experience is between 11 and 15 years.

How is the status of degree of fit of the model?

In order to determine the appropriate model for social responsibility of audit firms with the grounded theory approach, confirmatory factor analysis was used. Figure 1 shows the graph of path fitted to the data. As the chi-square and RMSEA indicators show, the modified model provides a better fit for the data. The model outputs are shown in Table 5.

As can be seen, the fit indices of model are in good status. It is worth noting, however, that according to a study in the literature, each of the identified dimensions included components making up the indices of each dimension.

Given that in the tested model above, the paths between the variables are the same as the effectiveness of the factors, Figure 1 shows the estimation of the standard coefficients of the paths along with the factor load of each variable.

The calculation formulas for structural equation modeling are as follows:

SEM or Simultaneous Equations with Latent Variables I

- an SEM model is 'simply' a simultaneous equations model where, unfortunately, the endogeneuos and exogeneous variables are latent, i.e. not observable

Table 3: The extracted components identified following using the existing literature

Number of items	Component	Variable
3	Trust	Factors affecting the social responsibility of audit firms
3	Technical and comparablility	
3	The willingness to invest	
3	Law-orientedness	
6	Business ethics	
3	The size of the audit firm	
3	Audit quality	
3	Auditor's expertise	
4	The size of the audited company	
3	Audit fee	
3	Audit time budget	
6	Internal controls of companies	
6	Voluntary disclosure of financial statements	
6	Transparency of financial statements	
7	Personality traits of corporate CEO	
4	Accounting conservatism	
6	Political considerations	
6	Social presence	Factors constituting the social responsibility of audit firms
3	Environmental presence	
3	Anti-corruption presence	
4	Financial development	Factors affected by the social responsibility of audit firms
3	Information validity	
3	Information quality	
3	Social trust and participation	
5	Corruption	

- in SEM models,
  - ▶ the m (latent) endogeneous variables are usually called η
  - ▶ the n (latent) exogeneous variables are usually called ξ
  - ▶ the m-dimensional error term is usually called ζ
  - ▶ the relations between the latent variables are modeled by $\eta = B\eta + \Gamma\xi + \zeta$ or $\eta = \alpha\eta + B\eta + \Gamma\xi + \zeta$ with the assumptions $E(\zeta) = 0$, $I - B$ non-singular, and ξ uncorrelated to ζ. The intercept term $\alpha\eta$ is only included when means of the latent variables are to be considered, too.

SEM or Simultaneous Equations with Latent Variables II

- ∗ the so-called structural equation $\eta = \alpha\eta + B\eta + \Gamma\xi + \zeta$ must be accompanied by so-called measurement equations which relate the latent variables ξ and η · to their observable coun-

Table 4: Demographic information and research variables

Percentage	Frequency	Class	Variable	Percentage	Frequency	Class	Variable
11	16	Below 5 years	Work experience	40	58	BA	Education level
19	28	Between 6-10 years		39	57	MA	
54	78	Between 11-15 years		21	30	PhD	
16	23	Above 16 years		2	3	Below 35 years old	Age
				12	17	between 36-40 years old	
				36	52	between 41-45 years old	
				50	73	Above 45 years old	
				31	45	Female	Gender
				69	100	Male	

Table 5: fit indices of model path analysis

Acceptable fit	Value	Abbreviation	Index name	Index
	1311.17	-	Area under the curve (Chi-square)	Absolute fit indices
>0.9	0.97	GFI	Goodness of fit index	
>0.9	0.92	AGFI	Adjusted goodness of fit index	Comparative fit indices
>0.9	0.99	CFI	Comparative fit indices	
0.1>	0.048	RMSEA	Root mean square error of approximation	Parsimonious fit indices

terparts x and y:
$x = \Lambda\xi + \delta, \;\; y = \Lambda_y\eta^+, \;\;$ or $\;\; x = \alpha x + \Lambda x\xi + \delta, \;\; y = \alpha y + \Lambda_y\eta^+, \; €$

where

- x and y, often called indicators (for ξ and η), consist of q and p observable variables, respectively,
- $\Lambda x \in R^{q\times n}$ and $\Lambda_y \in R^{p\times m}$ are matrices which contain the so-called factor loadings
- δ and are q- and p-dimensional error terms.

- ▶ the intercept terms α_x and α_y are included only if means are to be considered, too.

SEM or Simultaneous Equations with Latent Variables III

- all error terms are assumed to have zero mean
- usually, ξ, x, η, y are also assumed to have zero mean: in this case, no intercept terms appear in the above equations, and demeaned data are used (this does not hold, though, for instance for so-called multi-group or latent curve models)
- it is assumed that both and δ are uncorrelated with ζ and ξ, and that the two error terms and δ are uncorrelated
- often, the covariance matrices are called Φ (for ξ), Ψ (for ζ), Θ (for €), and Θ_δ (for δ)
- however, the notations Σ_ξ, Σ_ζ, Σ and Σ_δ are much more intuitive and will be used in the sequel

Summary of SEM Equations, Quantities, and Assumptions

- structural equation: $\eta = (\alpha\eta^+)B\eta + \Gamma\xi + \zeta$
- measurement equations:

$$x = (\alpha x^+)\Lambda x\xi + \delta, \quad y = (\alpha y^+)\Lambda y\eta + €$$

  - ∗ ξ: n latent exogeneous random variables with covariance matrix Σ_ξ
  - ∗ η: m latent endogeneous random variables
  - ∗ x, y: q- and p-dimensional observable random variables, indicators of ξ and η
  - ∗ ζ, δ, €: m-, q-, p-dimensional error terms with covariance matrices Σ_ζ, Σ_δ, $\Sigma_€$
  - ∗ it is assumed that $\Sigma_{\xi\zeta} = 0$, $\Sigma_{€\delta} = 0$, $\Sigma_{\xi€} = 0$, $\Sigma_{\xi\delta} = 0$, $\Sigma_{\xi€} = 0$, $\Sigma_{\zeta\delta} = 0$
  - ∗ fixed, but unknown quantities (model parameters): B, Γ, Λx, Λy when means are considered, additionally α_η, α_x, α_y

Fundamental Theorem of SEM I

- ∗ under the assumptions stated above,
- ∗ the covariance matrix Σ_x of the latent exogeneous variables' observed indicators x is given by: $\Sigma_x = \Lambda_x\Sigma\xi\Lambda' x + \Sigma_\delta$
- ▶ the covariance matrix Σ_{xy} between the latent exogeneous variables' obeserved indicators x and the latent endogeneous variables' observed indicators y is given by: $\Sigma_{xy} = \Lambda_x\Sigma_\xi\Lambda'(I - B')^{-1}\Lambda' y$
- ▶ the covariance matrix Σx of the latent endogeneous variables' observed indicators y is given by: $\Sigma_y = \Lambda_y(I - B)^{-1}(\Gamma\Sigma_\xi\Gamma' + \Sigma_\zeta)(I - B')^{-1}\Lambda' y + \Sigma_€$

Fundamental Theorem of SEM II

- the unknown parameters, i.e. the structural parameters contained in B and Γ, the factor loadings contained in Λx and Λy, as well as the variances and covariances contained in Σ_ξ, Σ_ζ, Σ_δ, and Σ_ϵ are determined such that the differences between the model-implied covariances delivered by the fundamental theorem and the empirical estimates Σ_x, Σ_{xy}, and b Σ_y are as small as possible
- estimating the parameters by matching empirical and model-implied covariances can be done by using the empirical covariances of the observed variables only, therefore software packages often do not only accept raw data, but can also simply be given the empirical covariances
- for these reasons, one speaks of 'covariance-based' estimation of SEM models

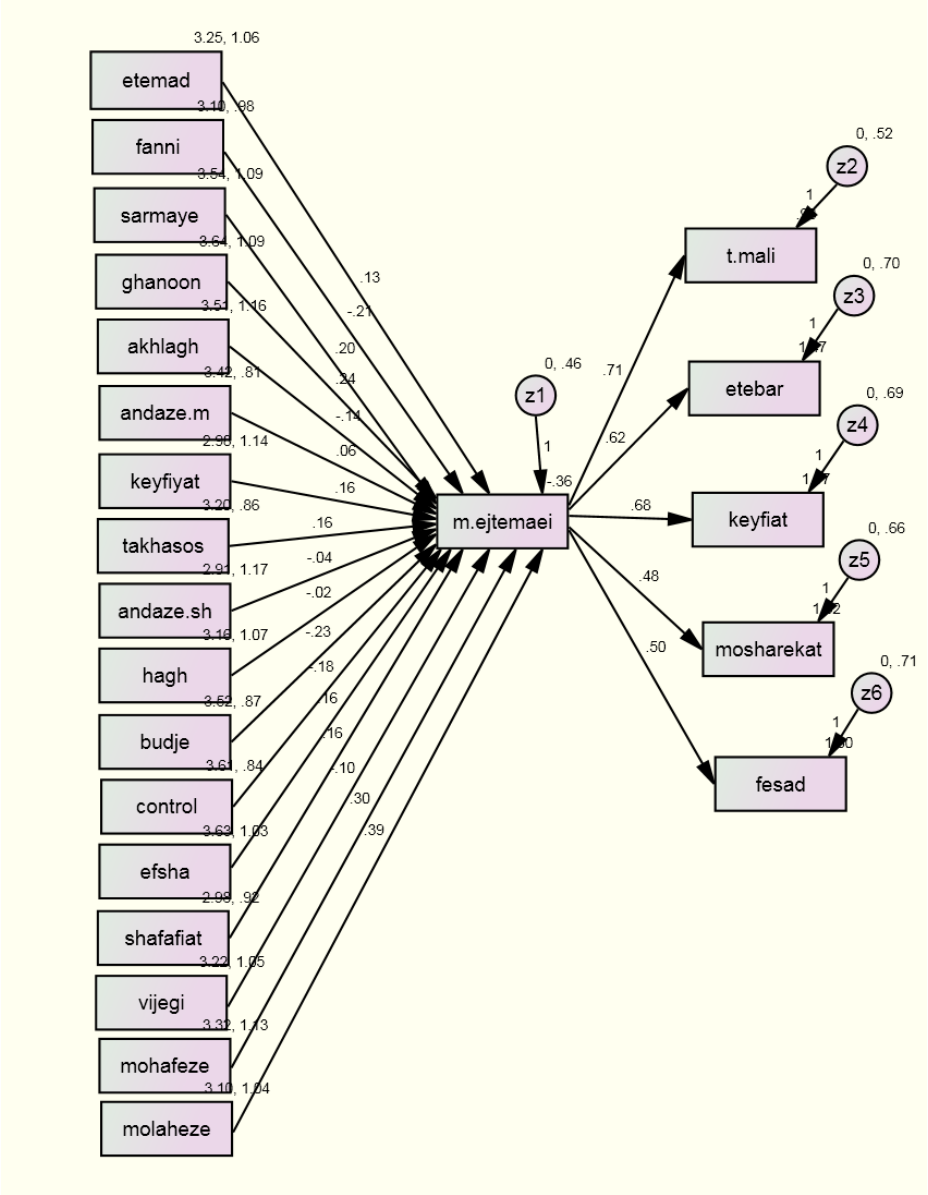

Figure 1: Structural model of research in estimating standard coefficients

All values of the parameters related to the social responsibility of the audit firms along with the path coefficients and significance values are summarized in the table 6.

The results show that all factor loads have a significant difference from zero. Therefore, based on the results shown, considering the significance level less than 0.05 and the value of the critical ratio, which is greater than 1.96, it can be claimed that the affecting and affected components of the research are confirmed.

Finally, according to the research findings based on the interview, the questionnaire and theoretical foundations of the final model are presented as follows.

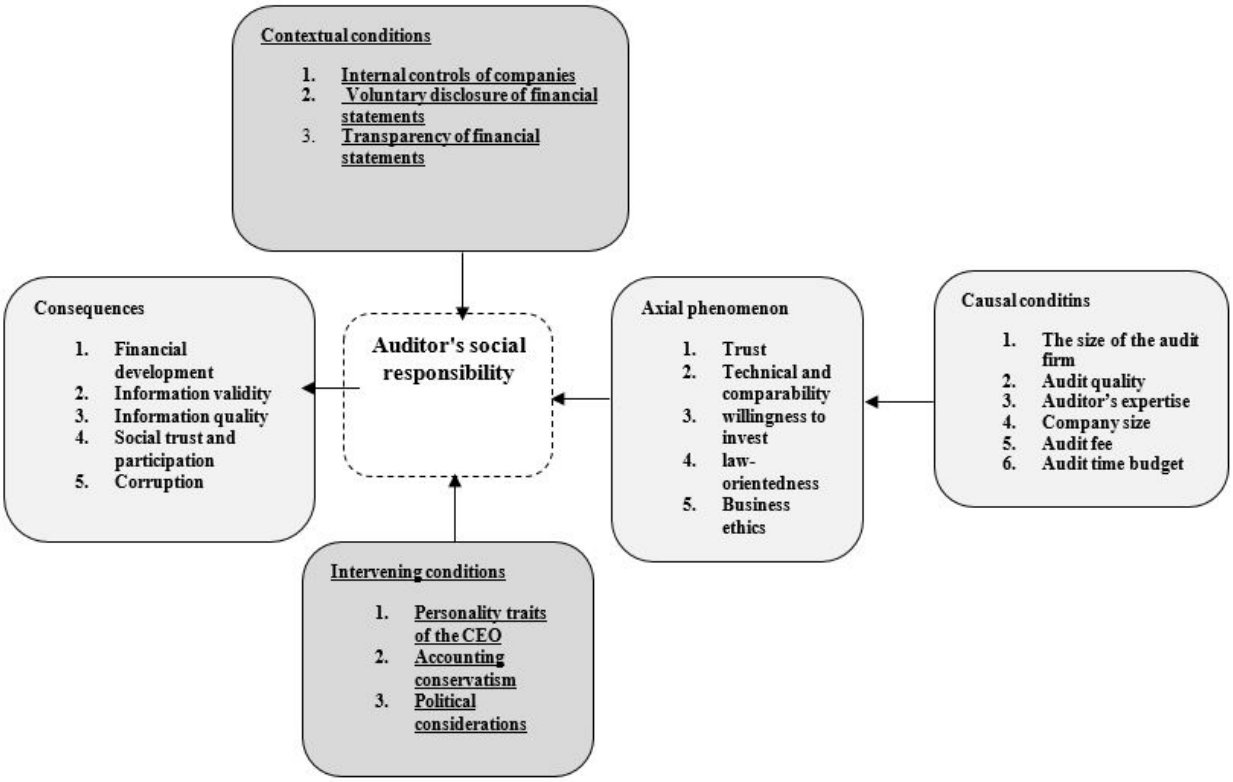

Figure 2: Structural model of research in estimating standard coefficients

Also, in order to know the status of the components of social responsibility of audit firms and the affecting and affected factors, t-test was used due to the normality of data distribution and the interval scale of variables. In this section, considering that the scale is 5-point, numerical value was assumed 3 to be compared to the t statistic.

The following formulas are used to calculate the one-sample t-test:
The null hypothesis (H_0) and (two-tailed) alternative hypothesis (H_1) of the one sample T test can be expressed as:

- H_0: $\mu = x$ ("the sample mean is equal to the [proposed] population mean")
- H_1: $\mu \neq x$ ("the sample mean is not equal to the [proposed] population mean")

where μ is a constant proposed for the population mean and x is the sample mean.
The test statistic for a One Sample t Test is denoted t, which is calculated using the following formula:
$t = \frac{\bar{x}-\mu}{S_{\bar{x}}}$ where $S_{\bar{x}} = \frac{S}{\sqrt{n}}$ where
μ= Proposed constant for the population mean
$\bar{x}$ = Sample mean

n= Sample size (i.e., number of observations)
S=Sample standard deviation
$S_{\bar{x}}$ = Estimated standard error of the mean (s/sqrt(n))

The calculated t value is then compared to the critical t value from the t distribution table with degrees of freedom $df = n-1$ and chosen confidence level. If the calculated t value > critical t value, then we reject the null hypothesis.
The followings are the null hypothesis and research hypothesis for this question:

- $H_0 : \mu = 3$
- $H_1 : \mu \neq 3$

The results of the one-sample t-test are given in the table below.

As seen in the table, the significance level in all dimensions and components is less than 0.05, and therefore the null hypothesis for these components is rejected with a 95% confidence level and the research hypothesis is confirmed. Also, given the mean difference, which is a positive value, it is inferred that the components and dimensions are in the desirable status.

5. Discussion and conclusion

This study aimed to present a model for measuring the social responsibility of audit firms using the grounded theory method.

In this study, in order to better understand the issue in the field of social responsibility of audit firms as well as to identify the dimensions and components and the factors affecting it, texts, theoretical foundations and literature review were used. These concepts, factors, and categories were used as the basis for developing a tool (questionnaire) to identify the dimensions and components of the social responsibility measurement model of audit firms. Among the 102 indicators (items) extracted from theoretical foundations and literature review, 22 main factors including 6 causal conditions, 5 axial phenomena, 3 contextual conditions, 3 intervening conditions and 5 consequences were identifiable. Based on the literature, background and existing theories, these factors were named as follows: causal conditions (audit firm size, audit quality, auditor's expertise, corporate size, audit fees and time budget), axial phenomena (trust, technical and comparability, willingness to invest, law-orientedness and business ethics), contextual conditions (internal controls, voluntary disclosure of financial statements, transparency of financial statements), intervening conditions (CEO's personality traits, accounting conservatism, and political considerations) and the consequences (financial development, information validity, information quality, social trust and participation, and corruption). Based on the obtained indicators, a researcher-made questionnaire consisting of 102 items was developed to measure the factors and provided to 147 accounting managers of Shasta companies, which finally 145 questionnaires were used. To ensure the validity of the researcher-made questionnaire, face, content and construct validity were used and approved according to the valuable opinions of the competent individuals and experts. Cronbach's alpha and composite reliability methods were also used to calculate reliability. The coefficient of all its items was reported to be above 0.7. Finally, the data were analyzed by one-sample t-test and structural equation modeling using SPSS and Lisrel software.

The results showed that all factor loads have a significant difference from zero. Therefore, based on the results shown, considering the significance level less than 0.05 and the value of the critical ratio greater than 1.96, it can be claimed that the affecting and affected components of the research are confirmed. Thus, according to the fitted model, audit fees have the highest impact on the social

responsibility of audit firms, and as it increases, the motivation and profit of audit firms to further commit to their social responsibility increases. The audit fee is followed by audit budget that determines how long the audit firm should complete the audit and in what areas it audits. Also in the third place of the factors affecting the social responsibility of auditing is the size of the audited company. The size of the audited companies increases the social responsibility of companies and according to the dimensions of social responsibility of audit firms, corruption and anti-corruption will be more pronounced in large companies, so it has a greater impact on corporate social responsibility. Among the factors affected by the social responsibility of audit firms, financial development is most affected by the social responsibility of audit firms, because when audit firms exercise and are committed to their social responsibility, corruption and possible deviations in the country's financial field are reduced. Therefore, the social responsibility of companies can have a high impact on the country's financial development. Then, there is the information quality. If companies are commited to their social responsibilities, the quality of information will increase significantly, and financial statements and disclosure of information by companies can be welcomed by more people through their high quality. In the third place of the factors affected by the social responsibility of audit firms is the information validity, because due to the social responsibility of audit firms, and their implementation by these companies, the validity of financial statements is audited and their information quality increases.

According to the research findings, the following suggestions can be made:
The audit organization's involvement in determining auditors for different companies such that by creating a special framework, large audit firms are selected to audit large companies.
The compliance of Iran's auditing standards with global standards is largely desirable, and there is difference only between a few standards and the global level. To increase the audit quality, it is recommended that the internal audit level to be consistent with all global standards.

Companies should work with audit firms that have experience and expertise in auditing their industry, because auditing any industry requires an initial familiarity of the auditors with the atmosphere and variables governing that industry. In this regard, the intervention of the audit organization and the appointment of expert auditors can also have good results.

Large companies need to be audited on a large scale and require that a large and expert audit team be selected to audit these companies so that they can consider all aspects of auditing. Therefore, it is suggested that, in addition to the ranking of audit firms, another criterion and framework be created in terms of matching auditing firms and audited firms.

Payment of audit fees should be based on a clear framework that, in addition to considering the expertise and popularity of the audit firm, includes other aspects of work such as time and budget constraints, so that we can see coordination between audit payments to various firms.

Given that audit time budget is one of the limitations affecting the quality of auditing, it is recommended that the audit firms determine or change the time budget in proportion to the predicted volume of work at the time of concluding the audit contract or set up an audit team to look at all aspects of work despite time constraints.

Trust is a variable that must be considered at all levels of individual and work life. Therefore, audit firms should gain the trust of investors and companies at the beginning of their work by conducting high quality audits. To this end, using the prominent figures of the audit industry to ensure the quality of work of the audit firm can be a good solution in the work of the audit firm.

It is proposed that audit firms at least internally prepare the same reports in terms of appearance and work template and adhere to that template in all reports submitted by the company. Of course, there are standards for preparing audit reports that are ignored in practice, and we see a dramatic difference in audit reports in terms of appearance, even in an audit firm. Obviously, differences in the

appearance of audit reports will ultimately confuse users, leads to their lack of trust and discourage public investment.

It is suggested that audit firms provide high quality reports and important audit results on social networks and databases of the firms or audited firms by obtaining the necessary licenses so that the general public have more willing to invest by understanding the existence of the financial control system and its importance and achievements.

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Table 6: Factor load and significance level of research components

Significance level	Critical ratio	Standard error	Path coffecient	Path
0.000	3.812	0.074	0.13	Trust → Social responsibility of audit firms
0.008	4.019	0.083	0.41	Technical and Comparability → Social responsibility of audit firms
0.004	6.845	0.056	0.20	Willingness to invest → Social responsibility of audit firms
0.000	3.628	0.057	0.24	Law → orientedness → Social responsibility of audit firms
0.000	3.015	0.064	0.36	Business ethics → Social responsibility of audit firms
0.028	8.102	0.093	0.25	Size of the audit firm → Social responsibility of the audit firms
0.000	6.462	0.123	0.17	Audit quality → Social responsibility of audit firms
0.000	11.314	0.137	0.14	Auditor's expertise → Social responsibility of audit firms
0.000	7.360	0.057	0.45	The size of the audited company → Social responsibility of audit firms
0.000	10.496	0.054	0.67	Audit fee → Social responsibility of audit firms
0.000	9.371	0.059	0.51	Audit time budget → Social responsibility of audit firms
0.001	10.247	0.083	0.16	Internal controls of companies → Social responsibility of audit firms
0.000	12.355	0.109	0.29	Voluntary disclosure of financial → Social responsibility of audit firms
0.000	8.069	0.096	0.14	Transparency of financial statements → Social responsibility of audit firms
0.000	4.399	0.066	0.10	Personality traits of corporate CEO → Social responsibility of audit firms
0.000	6.358	0.049	0.30	Accounting conservatism → Social responsibility of audit firms
0.000	5.745	0.142	0.38	Political considerations → Social responsibility of audit firms
0.000	8.341	0.072	0.71	Social responsibility of audit firms → Financial development
0.010	9.255	0.077	0.61	Social responsibility of audit firms → Information validity
0.000	11.060	0.116	0.65	Social responsibility of audit firms → Information quality
0.000	7.099	0.069	0.53	Social responsibility of audit firms → Social trust and participation
0.000	6.030	0.055	0.55	Social responsibility of audit firms → Corruption

Table 7: The one-sample t-test for investigating the current status

Dimension	Component	Test value=3				
		t value	Sig.	Mean difference	95% confidence interval from difference	
					Low limit	High limit
Factors affecting social responsibility of audit firms	Trust	9.18	0.000	0.36	0.29	0.44
	Technical and comparablility	7.83	0.000	0.31	0.24	0.39
	The willingness to invest	5.46	0.000	0.24	0.15	0.33
	Law-orientedness	10.31	0.000	0.45	0.75	0.89
	Business ethics	2.51	0.012	0.11	0.02	0.19
	The size of the audit firm	8.02	0.001	0.12	0.64	0.79
	Audit quality	3.01	0.003	0.13	0.14	0.21
	Auditor's expertise	4.02	0.000	0.09	0.50	0.61
	The size of the audited company	10.01	0.000	1.11	0.92	0.99
	Audit fee	8.05	0.000	0.65	0.48	1.45
	Audit time budget	10.77	0.000	0.48	0.39	0.56
	Internal controls of companies	4.84	0.000	0.22	0.13	0.31
	Voluntary disclosure of financial statements	8.03	0.000	0.30	0.22	0.37
	Transparency of financial statements	4.49	0.000	0.18	0.10	0.25
	Personality traits of corporate CEO	11.20	0.000	0.50	0.84	1.03
	Accounting conservatism	6.49	0.000	0.26	0.18	0.34
	Political considerations	7.30	0.000	0.91	0.59	0.78
Affected factors		**7.14**	**0.0009**	**0.37**	**0.38**	**0.58**
Factors affected by social responsibility of audit firms	Financial development	10.36	0.000	0.90	0.55	0.82
	Information validity	6.84	0.000	0.27	0.19	0.35
	Information quality	11.37	0.000	0.47	0.39	0.55
	Social trust and participation	9.56	0.010	0.86	0.64	0.74
	Corruption	6.99	0.000	0.77	0.48	0.92
Constituting factors		**9.02**	**0.002**	**0.65**	**0.45**	**0.67**
Factors constituting Social responsibility of audit firms	Social presence	7.33	0.001	0.78	0.83	0.95
	Environmental presence	6.66	0.000	0.14	0.24	0.77
	Anti-corruption presence	3.99	0.000	0.17	0.19	0.25
Social responsibility of audit firms		**5.99**	**0.0003**	**0.36**	**0.42**	**0.65**