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The role of information behavior in financial reporting (With an emphasis on information entropy theory)

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Abstract

In financial markets, according to the mechanism of information exchange between sender and receiver (user of information), the knowledge and awareness of the receiver are always limited to the amount of information sent by the sender. Therefore, in this research, an attempt has been made to design the model of information entropy in the financial reporting of companies by the method of grounded theory. This research is qualitative and exploratory. This research was carried out by interviewing experts in the field of theoretical foundations of behavioral and psychological financial theories and the field of the capital market, and it reached saturation by conducting 14 interviews in 2021 using the snowball sampling method. The findings of this research showed that for the model of financial reporting with the role of information behavior, strategies such as establishing a financial reporting committee with the role of information behavior and training the category of financial reporting with the role of information behavior are adopted. Finally, the coherent model showed that financial reporting with the role of information behavior leads to consequences such as increasing social trust and confidence, growth and development of the company, and increasing the quality of financial information.

Keywords: financial reporting, information behavior, information entropy theory, foundation theory
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1 Introduction

The rapid development of technology and extensive environmental changes have given increasing momentum to the economy, and the increasing competition of economic enterprises has limited the achievement of profit and increased the possibility of being unable to fulfill obligations and stop their activities. The recent unprecedented bankruptcies of large companies and the fluctuations of the stock exchange in Iran, the existence of financial crises in important domestic companies and industries and their effect on the bankruptcy and destruction of companies, which can be referred to as a terrible financial tsunami, have created concerns that require the existence of tools shows to evaluate the strength and financial health of companies according to environmental conditions and financial reporting [18]. However, organizational support behavior is unethical behavior in its nature. Because it is contrary to the meta-procedures (meta-norms) or universal standards considered in terms of justice, law or social norms that are widely judged [20]. This brings potential benefits to the organization, such as increasing the organization's sales. Examples of

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unethical organizational behavior include a salesperson who conceals the effects of products to achieve the company's sales goal, conceals negative information about the company or the company's product from the public to protect the company's reputation and good image, or an accountant who It manipulates the reported to perform a desired performance of the company [19]. Hence, the performance of unethical organizational patronage behavior creates a dilemma where the interests of external stakeholders are harmed, when it may be beneficial to the interests of organizations. Following these conceptual features, Umphres and Bingham [20], identified two main determinants: positive social exchanges and organizational identity. In financial markets, according to the mechanism of information exchange between sender and receiver (user of information), the knowledge and awareness of the receiver are always limited to the amount of information sent by the sender. So, despite sending busy messages (interference) from the communication system, how can one have the best estimate of the value of the received information? Indexing and determining the value of messages is proportional to decreasing probability and increasing information. The less likely the message is, the more information it conveys to the user. The value of information is only related to the uncertainty and uncertainty of the recipient. In this case, in many cases, the degree or volume of information can be measured through mathematics and its quantity can also be calculated. Entropy represents the amount of uncertainty that results from the content of a message. This uncertainty is measured using the entropy index in the information entropy theory by a probability distribution [13]. Therefore, with the increase of information entropy, the certainty of decision-makers in using financial reports will decrease.

This research seeks to answer the question that what model is suitable for the financial reporting of companies with an emphasis on the role of information behavior and entropy theory? In order to answer this question, the contextual approach is used. In fact, the present study introduces a new concept of financial reporting with an emphasis on the role of information behavior. Therefore, it is expected that the results of this research can help company managers, auditors, financial analysts, investors and other stakeholders to better understand financial reporting and help them in making decisions. This research continued with the outline of the theoretical foundations and the background of the research related to the subject, as well as the explanation of the research method and the questions derived from the problem and the theoretical foundations of the research, and then explained the results of the test questions; And finally, conclusions and suggestions are expressed.

2 Theoretical foundations and research background

This research follows entropy theory, behavioral finance theories and information theory to propose theoretical foundations related to information behavior and financial reporting.

Reporting is necessary for accountability, and people have been reporting to their stakeholders for a long time to explain what they are doing. At first, the report was verbal and in the form of gestural signs, and then it was written using written symbols, and it entered a new stage with the appearance of calligraphy. Written reporting had not changed much until recently, but with recent developments in the field of computers, information technology and finally the Internet, financial and non-financial reporting has also entered a new stage [17]. The final product of the financial accounting process is providing financial information to various users, including internal and external stakeholders, in the form of accounting reports.

That group of accounting reports, which are prepared and presented with the aim of meeting the information needs of users outside the business unit, is included in the scope of financial reporting. Companies have to provide a set of financial and non-financial information in order to provide the information needed by the shareholders and in general the owners to help them in making decisions related to the optimal allocation of resources. The collection of this information includes financial statements, explanatory notes and other financial and non-financial supplementary information, which are affected by accounting standards, local, state and international requirements and regulations [17].

Entropy does not have a clear concept. In terms of volume, it can be said that each molecule occupies a part of the space. So, having more space means more distribution ways and more entropy, and this situation reduces user information. In this sense, the greater the irregularity in financial reporting, the less information about the component position of that reporting, and the entropy will increase. Figure 1 shows the important components of entropy in financial markets in a basic way.

Entropy expresses disorder (disorder) or uncertainty of a system. Also, entropy in information theory is a numerical measure of the amount of information or the degree of randomness of a random variable. This category is called entropy [23]. Entropy calculates the degree of uncertainty of users of financial statement information. The higher this amount is, the higher the degree of indecision and uncertainty, the work of analyzing financial statements will be difficult, that

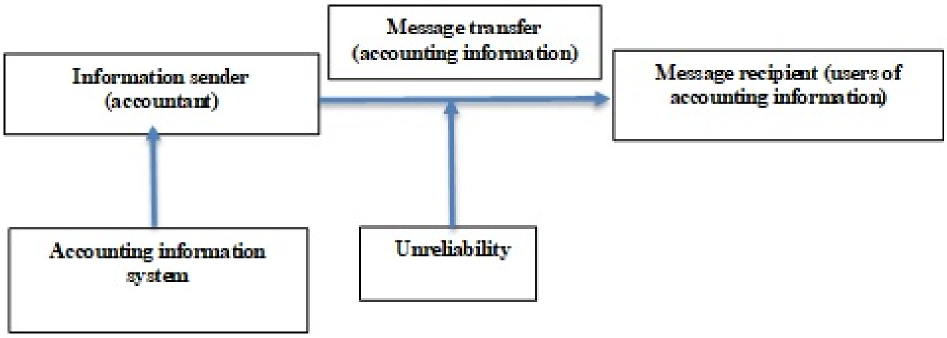

Figure 1: **Entropy components of financial information**

is, the financial analyst will face doubts about the estimates made in predicting the company's financial situation. The lower this amount is, the more successful the financial analyst will be in predicting the financial status of the company with financial success and failure [20].

In financial markets, according to the mechanism of information exchange between sender and receiver (user of information), the knowledge and awareness of the receiver are always limited to the amount of information sent by the sender. So, despite sending busy messages (interference) from the communication system, how can we have the best estimate of the value of the received information? One of the important applications of information entropy is in the field of analyzing financial statements and examining the amount of mass information that can be presented to investors and other users of financial statements. In general, the concept of information entropy is related to behavioral finance issues. In a thought experiment, if the information is worthless, the entropy of a system can decrease, thereby violating the second law of thermodynamics (the law of entropy or the death of order). Therefore, the material cost of obtaining information should be at least equal to the value of the information. Therefore, at the same time as the cost of information decreases, the value of the same type of information also decreases drastically. Information entropy also provides a quantitative measure of asymmetric information and shows that the cost of obtaining some information has a positive correlation with the value of this information. This greatly improves the theory of information in the capital market. In this theory, information asymmetry is a qualitative concept and the cost of obtaining information is generally exogenous [6].

Behavioral biases create decision errors and cause deviations from correct and optimal decisions. Being aware of these biases causes more attention and awareness of investors in the decision-making process and causes investors to be more careful when faced with said biases. They can react well and make more rational decisions. It is necessary to have a systematic approach to the capital market and its actions and reactions in order to gain correct knowledge of it. In today's complex markets, in order to provide a correct analysis of the market, we must know all the factors affecting it. One of the important and effective factors in financial markets is the behavioral actions of investors. This subject is so important and influential that in recent years, financial scientists have theorized the set of investors' behavioral interactions and placed them in a relatively expanded category called financial behavior. Many financial experts believe that the main root of this field should be found in cognitive psychology. Cognitive psychology is the scientific study of cognition or the mental process that many believe is the origin of human behavior. The field of cognitive psychology studies includes topics such as mind, attention, perception, showing facts, reasoning and problem-solving. Behavioral financial models are models in which the assumption of complete rationality of investors is discarded, so errors and biases occur in decision-making, which is beneficial for investors to be aware of. These errors and biases occur because of the human tendency to take shortcuts and overemphasis on experience, unfounded feelings, illusions and rough calculations, and in general distance from reality. Although in some cases these biases may have positive results, the possibility of negative results is very high. In summary, behavioral biases are called systematic errors. The defined judgment of behavioral studies and what is discussed in psychology introduces human behavior better and states that no matter how rational human beings are, they face behavioral biases in some cases. Behavioral biases cause limited knowledge or deviation from reality and as a result, they cause illogical or unreasonable actions. Behavioral biases at the macro level can affect the capital market and cause price fluctuations (bubbles) and market inefficiency from a side at the micro level and can lead to a decrease in returns and loss of investors [9].

Kim et al. [10], in research entitled Entropy of continuity of activity and professional doubt of auditors have stated that auditors need to determine a fundamental doubt threshold in order to determine the type of audit report to present, but fundamental doubt is not defined in auditing standards. Auditors are often criticized for having high thresholds that result in too few going concern reports. They have used Shannon's entropy from information theory as a measure to evaluate the information value of the audit report. Abd-Razak et al. [1], showed in their studies that the high sentiments of investors increase stock returns. Also, they found that individual transactions have a positive Equation with stock returns, and finally, investor sentiment plays an important role in explaining investor trading behavior on stock returns. Whitman [22], showed in research that sustainable reporting increases the return on equity, return on assets and profit margin of companies. Loh et al. [12], investigated the Equation between reporting sustainability and company value and reached the conclusion that financial reporting sustainability increases company value and corporate governance strengthens the Equation between these two variables. Wang et al. [21], studied the Equation between health information technology and the performance and financial health of hospitals and concluded that investing in health information technology increases the profitability and financial health of hospitals. Li et al. [11], dealt with organizational resilience with a theoretical model and its consequences. The results of this study showed that organizations are all exposed to a diverse and ever-changing environment and uncertainty, and in this situation, they must develop capabilities that can withstand and overcome financial crises. Also, the results show that environmental variables including social responsibility, environment, human capital and professional ethics are effective factors in companies' resilience. Balugani [3], argued in research that the principles of organizational sustainability should include the economic, environmental and social effects of a company's performance, which can ultimately improve the financial viability of companies and support its growth and survival.

Moradi et al. [16], investigated the effect of investors' emotional behavior and free-floating shares on the return of shares of the Tehran Stock Exchange using the generalized moments method and reached the conclusion that the emotional behavior of shareholders causes the increase of free-floating shares. Mirlohi and Mohammadi Todashki [14], in their research on the topic of forming an optimal investment portfolio in the Tehran Stock Exchange using hierarchical and discriminative clustering methods, try to use market data and clustering. It provides a suitable method for portfolio optimization. The comparison result will clarify the success rate of optimization based on clustering compared to the index portfolio.

Conservative information behavior

Profit and loss conservatism

To measure this variable, the extended regression model of Basu [4], is used:

$$\begin{aligned} N = {} & \alpha_0 + \beta_1 DR + RET\left(\gamma + \gamma SIZE_{it} + \gamma LEV_{it} + \gamma \tfrac{M}{B_{it}}\right) \\ & + DR.RET\left(\mu + \mu SIZE_{it} + \mu LEV_{it} + \mu \tfrac{M}{B_{it}}\right) + \delta_1 SIZE_{it} \\ & + \delta_3 LEV_{it} + \delta_2 \tfrac{M}{B_{it}} + \delta_4 DR.SIZE_{it} + \delta_5 DR.LEV_{it} \\ & + \delta_6 DR.\tfrac{M}{B_{it}} + \varepsilon \end{aligned} \tag{2.1}$$

in which regardless of model indices:

N: profit per share divided by the market price of the share in the first financial period

RET: annual return on the company's stock

DR: dummy variable, equal to one for companies with negative returns and zero otherwise.

SIZE: natural logarithm of the market value of equity

LEV: debt to equity market value ratio

M/B: market value over book value of equity.

In this model, the DR.RET coefficient is an index of conservatism and the larger this index is, the more conservative it is. Time series and cross-sectional data are used in combination to estimate the coefficients of this model.

Hybrid conservatism

Gioly and Hein index is used as a hybrid approach of conservatism. Guli et al. [7], model is as follows.

$$ACC = (NI + DEP) - CFO \tag{2.2}$$

$$OACC = \Delta\left(AR + I + PE\right) - \Delta\left(AP + TP\right) \tag{2.3}$$

$$NOACC = ACC - OACC \tag{2.4}$$

where in the relations above:

ACC: is the total accruals, NI: is the net profit before unexpected items, DEP: is the depreciation expense, CFO: is the operating cash flow, OACC: is the operating accruals, AR: accounts receivable, I: inventory of materials and goods, PE: prepayment Expenses, AP: Accounts Payable, TP: Tax Payable and NOACC: Non-Operating Accruals.

According to the above relations, the conservatism index is obtained from relation (2.5).

$$Conservatism\ index = \frac{Non - operational\ accrual}{Total\ assets\ of\ the\ first\ period} \times (-1) \tag{2.5}$$

The possibility of fraudulent reporting

To measure the probability of fraudulent reporting, the logistic regression model of Equation (2.6) used by Blanco and Deol [5], (4.5) and adjusted according to Iran's environmental conditions was used.

$$\begin{aligned} FRAUD_{i,t} = \beta_0 + \beta_1 READ_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} \\ +\beta_4 ROE_{i,t} + \beta_5 GWTH_{i,t} + \beta_6 BIG_{i,t} \\ +\sum \beta_j Industry_i + \sum \beta_k Year_t + \varepsilon_{i,t} \end{aligned} \tag{2.6}$$

$FRAUD_{i,t}$ is the probability of fraudulent reporting of company i in year t. $READ_{i,t}$ is the readability of financial reporting of company i in year t. $SIZE_{i,t}$ is the size of the company, equal to the logarithm of the net annual sales of company i in year t. $LEV_{i,t}$ is the financial leverage, which is equal to the ratio of debt to total assets of company i in year t. $ROE_{i,t}$ is the profitability of company i in year t. $GWTH_{i,t}$ is the growth opportunity of firm i in year t. $BIG_{i,t}$ is the size of the audit firm of company i in year t.

3 Factors affecting ethical decision making

In this model, the factors influencing ethical decision making are auditors.

$$\begin{aligned} Y = \beta_0 + \beta X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \\ +\beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon. \end{aligned} \tag{3.1}$$

In this model, auditors' ethical decision-making as a dependent variable and the auditor's expected remorse variable as an independent variable have entered the research model.

$$Y = \beta_0 + \beta_1 FL + \beta_n Control\ Variables + \varepsilon. \tag{3.2}$$

In this model, auditors' ethical decision-making as a dependent variable, the auditor's expected feeling of regret as an independent variable, and the variable of restrictions on the right to choose as a moderating variable have been included in the research model.

$$Y = \beta_0 + \beta_1 FL + \beta_n Control\ Variables + \beta_2 LD + \beta_3 LD \times FL + \varepsilon \tag{3.3}$$

In this model, auditors' ethical decision-making as a dependent variable and internal auditor's personality behavioral pattern variable as an independent variable have entered the research model.

$$Y = \beta_0 + \beta_1 T_i + \beta_n Control\ Variables + \varepsilon \tag{3.4}$$

4 Weak internal control

$$\begin{aligned} AF_{it} = \alpha + \beta_1 ICW_{it} + \beta_2 PCON_{it} + \beta_3 ICW \times PCON_{it} + \beta_4 LEV_{it} \\ +\beta_5 LTA_{it} + \beta_5 REC_{it} + \beta_6 ROA_{it} + \beta_7 INST_{it} + \beta_8 AUDITOR_{it} + \varepsilon_{it}. \end{aligned} \tag{4.1}$$

According to the model, AF is the audit fee, ICW indicates the weakness of internal control, PCON is the political connections of the company, LEV is the financial leverage, LTA is the company size, REC is the ratio of total inventories and accounts receivable to the total assets of the company, ROA is the return on company assets, INST is the institutional owners and AUDITOR is the type of auditor. is the company

To measure discretionary accruals, the adjusted Jones model has been used. According to this model, discretionary accruals are equal to the difference between total accruals and nondiscretionary accruals. Therefore, first, in order to calculate the sum of non-discretionary accruals, relation (4.2) is estimated:

$$\begin{aligned} TACC_{i,t} = \alpha_0 \left({}^{1}/_{A_{i,t-1}} \right) + \alpha_1 \Delta SAL_{i,t} + \\ + \alpha_2 \Delta REC_{i,t} + \alpha_3 PPE_{i,t} + \delta_{i,t} \end{aligned} \tag{4.2}$$

$TACC_{i,t}$: total accruals of company i at the end of fiscal year t, total accruals are also obtained from the difference between operating profit and operating cash flow;

$A_{i,t-1}$ total assets of company i at the end of financial year $t-1$;

ΔSALi,t change in net sales of company i during financial year t;

$\Delta REC_{i,t}$ change in net accounts receivable of company i during financial year$t$;

$PPE_{i,t}$ net fixed assets of company i during fiscal year t.

$$NDACC_{i,t} = \hat{\alpha}_0 \left({}^{1}/_{A_{i,t-1}} \right) + \hat{\alpha}_1 \Delta SAL_{i,t} + \hat{\alpha}_2 \Delta REC_{i,t} + \hat{\alpha}_3 PPE_{i,t} \tag{4.3}$$

$NDACC_{i,t}$: is the non-discretionary accruals of company i at the end of fiscal year t.

Finally, optional accrual items are calculated based on the Equation (below).

$$DACC_{i,t} = TACC_{i,t} - NDACC_{i,t}. \tag{4.4}$$

After calculating discretionary accruals, the amount of profit management has been measured as a measure of lack of transparency of financial information through relation (4.5):

$$OPAQUE_{i,t} = Abs\left(DACC_{i,t-1}\right) + Abs\left(DACC_{i,t-2}\right) + Abs\left(DACC_{i,t-3}\right) \tag{4.5}$$

$OPAQUE_{i,t}$ measure of lack of transparency of company i's financial information at the end of financial year t;

the symbol of absolute value,

Abs: optional accrual items of company i at the end of fiscal year $t-1$,

$DACC_{i,t-2}$: optional accrual items of company i at the end of fiscal year $t-2$;

$DACC_{i,t-3}$ optional accrual items of company i at the end of fiscal year $t-3$.

5 Research questions

In order to achieve the main goal of the research, which does not seek to prove or disprove a specific claim, but merely seeks to develop the model of the role of information behavior in financial reporting, hypothesis design is not necessary for the current research, and the main effort is spent on answering the research questions. Based on this, the sub-questions of the research are proposed as follows:

1. Are information behaviors effective in financial reporting of companies? These behaviors can be related to the internal environment of the company, macroeconomic environment (causal, intervening and background conditions).
2. What actions should companies take to strengthen financial reporting? (Strategies)
3. What is the effect of financial reporting on the role of companies' information behavior at the company level? (consequences)

6 Methodology

The aim of the current research is to design a model of financial reporting with the role of information behavior of companies from the point of view of experts using the method of grounded theory. As a result, from the point of view of the time dimension, it is temporary; Because the interviews were conducted in 1400. From the point of view of the goal, it is exploratory for the following reasons;

1. Research on the design of a financial reporting model with the role of information behavior has not been conducted in the country with the method of this research (grounded theorizing):
2. The results of this research lead to the presentation of a theory;
3. The findings of this research develop the existing knowledge in the field of financial reporting.

This research, from the perspective of the implementation process (type of data), is of a qualitative type; Because in this research method, the first part (data) is collected from various sources such as interview, observation and participation, and in this research, data is collected through interview and questionnaire. Also, in the qualitative research method, the second part includes analytical and interpretation methods that are used to reach findings or theories.

These methods include ways of conceptualizing the data, which is known as "coding". In this research, open, central and selective coding methods were used. The third part of the qualitative research method consists of written reports or drawing diagrams and figures with oral presentation, which is used in this research. Also, in this research, from the perspective of the result of the implementation, it is of a fundamental type, which is done with the aim of discovering the nature of the phenomena. From the point of view of implementation logic (or type of reasoning) it is of inductive type; Because in this research, the interviewees provide their explanations regarding the results of the phenomena according to their experiences.

In the 1960s, Barney Glaser and Anselm Strauss published a book entitled "Discovering Grounded Theorizing", whose aim was to provide a solution to reduce the dominance of generalism that was common at that time in the field of social science studies. In a simple description, it can be said that Glaser and Strauss looked at the common positivist and analogical approach of their time in an upside-down way. In other words, they considered qualitative analysis before quantitative analysis and theory production before testing it. The qualitative approach of these two researchers provided an opportunity for them to study complex phenomena that could not be investigated with quantitative methods [15].

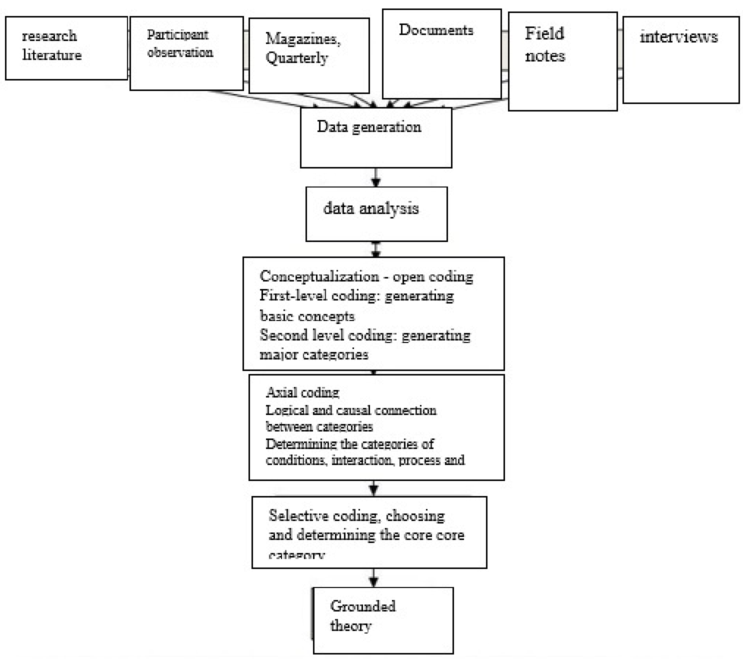

Figure 2: **The stages of conducting research based on the grounded theory**

The most important reason for choosing the ground theory method is that:

First; When little is known about the subject area. Second; When the researcher understands the perceptions and experiences of the participants in a particular case, and third; When the goal of the researcher is to develop a new theory [8].

On the other hand, according to the mentioned goals, this research seeks to provide a proper understanding and awareness of sustainable reporting by applying the foundation theory. In this research, contextual interviews are conducted from the focus groups before conducting the research. For this purpose, a number of financial experts and experts were interviewed and the insights obtained from this initial interview are used to develop and improve the interview guide. After conducting the focus group interviews, interview guidelines were prepared in order to achieve:

1. Uniformity and coverage of research questions (subjects to be researched),
2. reducing the researcher's biases towards preconceived issues and
3. Asking key questions in order to explore the experiences of the participants is ensured.

It is worth mentioning that the interview guidelines have been provided to several academic and professional experts and their opinions will be taken and final amendments will be made. The interviews are semi-structured and in most cases the interviewee is encouraged to give open and independent answers.

In a semi-structured interview, the questions are designed in advance and the goal is to obtain in-depth information from the interviewee, and each answer may be further investigated with other questions.

of different groups, which are four major groups involved in financial reporting of companies, which include:

1. Accountants and managers of companies active in the capital market
2. Managers of financial institutions active in the capital market
3. Chartered accountants and independent auditors
4. University faculty members

To be identified based on grounded theory. These four main groups were selected based on the financial reporting chain with the role of information behavior. In fact, the financial reporting supply chain refers to people and processes that can play a role in the financial reporting of companies. In this chain, all components must have a close Equation to lead to the quality of stable financial reporting of companies. In fact, in the current research, the basis of presenting the model of financial reporting with the role of information behavior is the interview of the experts of the indicated professions according to a type of qualitative research called theorizing the foundation context and the comprehensive model resulting from it. It seems that conducting research in Iran in order to discover and identify external factors and mechanisms that govern financial reporting from the perspective of different groups using grounded theory can, in addition to choosing a new perspective on research related to the field of research, provide the necessary background for improving the quality of financial reporting. to provide According to the mentioned materials, the main question that this research seeks to answer is, what is the optimal model of financial reporting with the role of information behavior in Iran from the point of view of different groups?

7 Research findings

The implementation of foundational theorizing is generally done in two basic steps as follows:

Step 1 - Data collection: The primary data of this research was collected from the source of structured interviews with experts and with an exploratory approach using 3 general and open questions as follows:

1. Are information behaviors effective in financial reporting of companies? These behaviors can be related to the internal environment of the company, macroeconomic environment (causal, intervening and background conditions).
2. What actions should companies take to strengthen financial reporting? (Strategies)
3. What is the effect of financial accounting on the role of companies' information behavior at the company level? (consequences)
4. The second step - text coding and theorizing: the coding process includes three levels: open coding, central coding and selective coding, which are explained below:

Open Coding: During open coding, the data is broken down into individual parts and analyzed to obtain similarities and differences. Then these concepts are classified based on their similarities, which is called categorization. A category is a concept and is more abstract than other concepts, and the foundation of the theory is formed from them. In short, the result of open coding is a set of conceptual categories created from the data.

Axial coding: In axial coding, internal connections are established between the basic categories that are expanded in open coding, at the level of features and dimensions. At the end of this stage, the categories are divided according to causal conditions, intervening conditions, contextual conditions, strategies and consequences. The main topic in this research is financial reporting with the role of information behavior of the company.

Selective coding and theory creation: In this research, the created model is presented using diagrams and narration.

Examples in grounded theory are generally selected purposefully and by snowball method.

Snowball or chain sampling means choosing participants who are somehow connected to each other and guide the researcher to other people in the same group. In other words, in the interview, first, a number of knowledgeable people with sufficient education and experience related to the research topic were selected and at the end of the interview, they were asked to introduce other informed and knowledgeable people regarding the research topic. Based on this, 14 interviews were conducted and sampling reached theoretical saturation and no new interviews were conducted. Theoretical saturation means that no new concepts and categories are formed by conducting the last interview, and the conducted interviews are sufficient to start the statistical analysis. The average duration of the interview for designing a coherent model of the financial reporting model with the role of information behavior is about 15 minutes. To measure the validity and reliability of the research, before starting the interviews, after interviewing 3 experts from universities, professions and companies and obtaining their opinions, an interview guide was prepared and the interviews were conducted around the interview guide. With the increase in the number of interviews, the interview guide was also expanded. The methodology and selection of these people is such that they either have research or published books in the field of financial reporting with the role of information behavior, or they have scientifically prepared a report on the subject of research.

All interviews were recorded with the permission of the interviewees and the researchers reviewed each interview several times. In order to validate the findings, the analysis and coding results of some interviews were provided to 3 participants in the research and 3 non-participants. Experts generally considered the extracted model valid.

The purpose of this research is to design a coherent model of financial reporting with the role of information behavior. An in-depth interview was conducted with 14 experts in the field of theoretical foundations of financial reporting, managers of regulatory institutions and stock exchange organizations, accountants and investment managers, shareholders and investors, and university faculty members. Table (1) shows the general characteristics of the interviewees.

Table 1: Demographic information of the respondents

The main criterion	**Gender**		**Field of Study**			**License**			**Work experience**				**Expertise**			
Classification subcriterion	Male	Female	Accounting and auditing	management and finance	Other	bA	bA	Doctoral degrees	less than 5 years	5 years to 10 years	10 years to 15 years	more than 15 years	accountants and managers of companies	shareholders and investors	managers of regulatory institutions and Bahabazar organization	university faculty members
Number	11	3	6	7	1	0	5	9	2	3	6	3	6	2	3	3

Open Coding: The result of open coding is a set of conceptual categories created from the data. In the following, the method of open coding is explained with one of the interviewees. After extracting the concepts from the interviews, the concepts are grouped based on similarities and differences and categories are formed. In this research, a total of 70 concepts were extracted from the interviews, which were reduced to 32 main categories. The full description of these categories is presented in table (2).

Axial coding: The components of the coherent model of financial reporting of companies are: causal conditions, intervening conditions, contextual conditions, strategies. In the following, all the components of the coherent pattern of financial reporting of companies are mentioned and the interpretations related to each category are stated in their related picture.

Causal conditions: Causal conditions are the categories that create the main category and help the occurrence and expansion of the considered phenomenon; Mostly with words such as when, while, since, and... end with cause [2]. According to experts' opinions, 15 concepts of causal conditions of financial reporting have been considered with the role of information behavior. Interpretations related to this category are reported in table (2)

Table 2: Causal conditions

Category	**Description**
Entropy of information	According to experts, the semantic aspects of communication are not related to its technical issues, and the important thing is to choose a message from a set of possible messages. Therefore, information entropy is related to behavioral financial issues, and therefore, a strong selective pressure to transform information behaviors into mental principles or individual psychology through the important knowledge of genetic codes, and this affects financial reporting. According to experts, some of the common patterns of mental principles in the literature of behavioral finance and financial reporting, which were ultimately a single understanding from the perspective of entropy, were expressed as follows: - Principles of conservatism in financial reporting - Design or representation of collective or group behavior - Overconfidence - Avoidance of loss in winning (victory) and risk taking in loss
Social pressure	According to experts, the mandated social pressure increases the willingness of managers to strengthen financial reporting. Also, the probability of conservative reporting is much higher when there is social pressure, and operational and middle managers will try to fulfill the wishes and opinion of the company's CEO.
Willingness to take risks	Risk appetite is defined as the amount of risk that the company accepts in order to achieve its goals. According to experts, when the company's willingness to accept risk is less, the directive pressure from top managers causes financial managers to choose accounting policies that lead to financial reporting with a weak role of information behavior.
Inconsistent information	According to experts, further processing of preference-inconsistent information can strengthen the effects associated with preference-inconsistent information.
Color pressure	Congruent pressure is based on the theory of social comparison processes and usually happens when a person lacks sufficient knowledge and looks at the group as a guide or is in an ambiguous situation and compares his behavior with the group. According to experts, conformity pressure is a type of social influence that includes a change in belief or behavior to ultimately lead to a person's adaptation to a group. Usually, in financial reporting decisions, less attention has been paid to the effect of uniform pressure on financial reporting, and this issue is somewhat surprising.
Irregularities and anomalies	According to experts, decision-making in uncertain conditions systematically departs from the financial theories of behavior and conventional economics. Therefore, the irregularities and anomalies arising from behavioral financial discussions tell about how people make decisions according to their preferences and cognitive biases. Therefore, in financial markets, decision makers and users of financial reports do not always behave logically, predictably and impartially, and based on psychological theories, people tend to keep certain events in their minds in the form of imaginations and sometimes these perceptions have an even greater impact on people's behavior than the events themselves, which causes information behavior in financial reporting.
Individual characteristics	According to experts, personal characteristics are one of the categories of causal conditions, which, based on psychological theories, affect people's behavior. Some experts believed that "some financial managers have a series of personality traits that change their behavior over time. They believe that some people did not show their true personality at first, but over time, they show their true personality." They manifest and their behavior changes. Traits such as belief and moral weakness, greediness, and being greedy, which these traits provide the causes of informational behavior.
subjective judgments	According to experts, subjective judgments of individuals can originate from their perceptions. Perception is a process in which humans communicate with their surroundings. Therefore, people need to interpret, analyze and combine information in order to create an understanding and belief in relation to the experiences of appropriate informational behaviors consistent with the experience. As a result, when there are individual differences, people's perceptions and interpretations will also be different in the field of information behavior.
Environmental factors and requirements	According to experts, environmental factors are the most important factors that encourage companies to report. Such as long-term executive perspective, accounting experience and subjective knowledge, company management culture. One of the characteristics of knowledge and experience based on mental knowledge; Skills are a deep understanding that leads to collective knowledge, norms and routines or organizational skills and ultimately provides financial reporting.
Clarify accounting activities	According to experts, accounting activities should be transparent. Companies use accounting transparency for reliable information about their relative performance, financial position, investment opportunities, value and risk level. Companies need transparency to avoid stagnation and because of society's expectations.
Disclosure of organizational information	According to experts, human capital refers to education, knowledge, skills, learning, expertise and experience. Human capital disclosure is defined as disclosure of organizational information about employees' education, knowledge, learning skills, expertise and experiences in their tax report.

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Category	Description
Disclosure of social responsibility	According to experts, a report that affects business activity and even negative factors affecting it, such as employees, social participation, environmental concerns, and other ethical issues, is defined as social responsibility reporting. For this purpose, the social responsibility report is becoming bolder towards strengthening the environmental performance and improving the work environment and social welfare, which may be the best advertisement for a company.
Environmental incentives	Most of the companies try to show themselves at the level of the whole market and industry during their recession, they pay attention to the factor of financial reporting, and many experts in this field pointed to companies that try to increase the standards related to financial reporting by planning.
Environmental pressures	Another important factor that the experts mentioned in the interviews is the category of environmental pressures. In their opinion, by expanding and increasing the ability to respond to different groups. All groups are trying to satisfy all stakeholders in different ways.
Political features	According to experts, the political characteristics of Iran have caused many sanctions to be imposed against the country and Iranian companies (especially companies active in the capital market) in recent years. As a result, Iranian companies have been involved with fundamental problems and issues in recent years, and currently they cannot focus all their energy and focus on financial reporting issues. According to the interviewees, in order to pass through this historical path of the country, companies must have a vision and strategies.

7.1 Intervening conditions

Intervening conditions are structural conditions that belong to phenomena and affect action and reaction strategies. They facilitate or constrain strategies within a particular context.

Table 3: Intervening conditions

Category	Description
Characteristics of corporate governance	According to the interviewees, the characteristics of corporate governance are effective in companies' desire for financial reporting. For example, the effectiveness of internal controls, board of directors, audit committee, risk management committee, compensation committee, shareholder rights and disclosure and transparency. In cases where influential shareholders have the power to appoint members of the board of directors, the board of directors must take necessary precautionary measures. In such cases, it should be noted that the members of the board of directors, regardless of who appointed them, have responsibilities towards the bank itself. Transparency is considered a key tool to help consolidate and implement the basic principles of good corporate governance. Transparency is considered a necessary factor for correct and effective corporate governance. In the field of corporate governance, it is important and necessary for the parties to provide information so that they can evaluate the work of the board of directors and the executive board in the field of managing affairs, in accordance with internal laws and within the framework of supervisory methods. The set of Equations between the management, board of directors, shareholders and other stakeholders of a company is the members of the board of directors, which determines the structure by which the goals of the company and the means of achieving these goals and monitoring their performance are determined. Good corporate governance should provide suitable incentives for the board of directors and the executive board in order to pursue the goals of the organization and in line with the interests of the company and its shareholders and facilitate effective supervision. The existence of an effective corporate governance system in a company or a group of companies or in the economy in general helps to create the necessary assurance for the correct operation of the market-based economy. In corporate management, internal audit services and the audit committee, which is chaired by a non-executive member of the board of directors, play the role of a consultant for the board of directors. The duties of the audit committee include ensuring control and accounting systems. The agency theory considers the creation of the audit committee as a tool to reduce agency costs and improve internal controls, and it is an effective monitoring tool to improve Equations.
Structural features of the company	Large companies are more likely to strengthen financial reporting. Older companies are more likely to adopt this strategy due to their development and age.
Organizational risk management	According to experts, organizational risk management has become a vital guideline for many companies in the field of behavioral finance. Organizational risk management is not separate from strategy, planning and daily decisions and helps companies to focus on risks that threaten the company's goals in the field of financial reporting in order to achieve goals and avoid bankruptcy.
Planning and control	According to experts, information and information behaviors are needed to plan and control financial reporting of companies. The objectives of financial reporting and accounting principles require that the information provided by financial reporting have certain characteristics in order to be effective in the decisions of investors and other stakeholders.
information system	According to experts, one of the important factors in information behavior and ultimately financial reporting is having an information system. Information is an expensive resource for users, especially investors. Information, awareness and alertness and behavior gives optimal information, creates surprise and motivates and reduces the occurrence of entropy and uncertainty and disorder of a choice.

7.2 Background conditions

Contextual conditions are a special set of conditions that come together in a specific time and place to create a set of situations, conditions or issues that people respond to with their actions [7]. Based on the conducted interviews, financial reporting is affected by the following categories as background conditions. These conditions are explained in table (4).

Table 4: Background conditions

Category	Description
Implicit knowledge and experience of managers	According to experts, today we are witnessing rapid changes in technologies and the complexity of organizations' environment. In such a situation, in order to save their lives, organizations are forced to change continuously so as not to fall behind the competitors. But this change must necessarily be based on collecting data and appropriate information from the environment and turning it into knowledge.
Accounting environment	The scope of practical features in the environment and fields of individual and social accounting should be directed to the factors and structures of the accounting environment, such as awareness of accounting ethics, voluntary accounting activity, transparency of accounting mindset, disclosure of human capital and social responsibility reporting. The awareness of the accounting ethics of a company is based on value and moral judgment and decision-making in practice according to accounting laws and regulations. Therefore, moral judgment along with decision-making in practice and value basis should be based on: a) competence b) confidentiality c) honesty d) impartiality in accounting practice. Voluntary accounting activity (which is the disclosure of accounting information) refers to the company's decision to provide information or implement accounting standards. Accounting mainly includes compliance with related policies, methods and laws in order to maintain the company at the highest level of social acceptance and business reputation. Also, large companies are committed to their specific market actions in such a way that they arrange measures for the disclosure of their social and environmental information so that they get more profit and reputation due to voluntary activity. Transparency of accounting mindset refers to reliable information that enables users to make an accurate decision, or better, transparency of accounting mindset is reliable information that leads users to make more accurate decisions. Human capital refers to education, knowledge, skills, learning, expertise and experience. The totality and content of the report is varied and largely voluntary, and often the perspective of adequate disclosure of human capital information is important because it not only affects a company's ability to recruit and retain the best people, but also creates potential value for a company. Human capital information is an important component in the company's potential decision-making in the future, and it is in the interest of companies that seek to satisfy all investors (shareholders) requesting information to increase market value, and it is in the interest of all companies that provide information to satisfy shareholders. to increase their market value. Social responsibility report is a report that affects business activity and even negative factors affecting it, such as employees, social participation, environmental concerns and other ethical issues.
Economic factors	Economic factors are one of the important drivers in financial reporting of companies. If the company is in an unfavorable economic environment and conditions (recession and inflation), the effects of this issue will lead companies to an unfavorable financial reporting situation. According to experts, economic factors are another environmental factor that affects the behavior of people in an organization. be According to some experts, it was revealed that the sense of security and economic security inside and outside the organization and in the whole economic situation of the society can affect the stability or instability in the information behavior of people, and as a result, this will also affect the financial reporting. .
ethics fundamental	According to experts, one of the distinctive features of the accounting profession is accepting the responsibility of protecting the public interest. Hence, the responsibility of professional accountants is to act according to the code of professional behavior in order to protect the public interest. The code of professional conduct governing the profession is the source and origin of ethical principles in the field of financial reporting. Therefore, trust in the accuracy of information is the cornerstone of capital markets, and the low quality of financial reporting undermines this trust. According to experts, awareness of ethics in the accounting profession is an essential element of the way the accounting profession works, so that every accountant must have the ability to be ethical, because this category is an important aspect for the quality of accounting.
Management and organizational factors	According to experts, one of the causes of entropy behavior and ultimately asymmetric information behavior is managerial and organizational factors. Managers and their behaviors, as well as the organizational structure they design, affect the occurrence of asymmetric behaviors and weaknesses that lead to the formation of a destructive organizational culture and affect people's behaviors. In this context, some experts pointed to factors such as decision-making in the hands of managers and their directive style.
Understanding financial reporting standards	According to experts, financial reporting is one of the most important sources of information that, as the main product of the accounting system, plays an essential role in the decision-making of different capital market groups. This information is measured and presented during a calculation process and based on the principles and standards of competent authorities, and if they do not have the necessary transparency and favorable information behavior, the possibility of wrong decision by the recipient of the information increases. Therefore, taking into account that nowadays the process of changing the accounting standards is increasing in order to provide more quality accounting information and their internationalization and on the basis that at this time, the selection and use of accounting methods is more based on the principles than the rules. The analysis and subjective judgments of accountants are more than before.
Compliance with policies, procedures and laws	According to experts, compliance with related policies, methods and laws is to maintain the company (in the form of voluntary accounting activity) at the highest level of social acceptance and reputation of companies. Today, different companies choose different methods to show themselves voluntarily in improving the management of some voluntary activities, including the environment, etc., even beyond the legal requirements, which sometimes leads to the improvement of the company's financial performance and dynamic production.

7.3 Strategies

Strategies are based on actions and reactions to control, manage and deal with the considered phenomenon. Strategies have a purpose, have a reason and are purposeful. Experts and interviewees believed that the following categories are considered related strategies of the financial reporting model with the role of information behavior. These concepts and categories are explained in Table (5).

Table 5: Strategies

Category	Description
Establishment of the committee	Similar to various committees (auditing, risk, disclosure, etc.) that are formed in companies for specific issues and issues, in order to effectively perform the tasks related to accounting, a financial reporting committee should be formed in companies (in the field of financial vice). This committee can work under the supervision of the management accounting department, and its constituents are representatives of various financial and non-financial aspects.
Financial reporting with the role of information behavior	According to experts, all the employees of the financial field of the companies should regularly and periodically in the courses related to financial reporting with the role of information. Companies can apply for these courses from institutions such as educational centers and universities.

7.4 Consequences

Consequences are results that are created due to strategies and the formation of the main category. Consequences and results are the results of actions and reactions. According to experts, the categories of table (6) are consequences related to the financial reporting model with the role of information behavior.

Table 6: Results

Category	Description
Increasing confidence and social trust	Trust is one of the key elements in the development of social elements. Also, social trust (public trust) is like social capital for companies. The company's accounting unit is largely dependent on the amount of capital the company has. Therefore, gaining public trust and strengthening it is essential for all companies. On the other hand, accountability is one of the rights of all stakeholders. In addition, responding by clarifying information and reducing the rumor market against companies makes the stakeholders' attitude more positive towards the company, and this positive attitude increases their trust towards the company, which is considered an excellent goal.
Capital market growth and development	According to experts, financial reporting and sustainable quality of companies have emphasized the integration of ethics in society, environment and economy. Both ethical and economic behavior can be considered in achieving the goal of large companies and ultimately the growth and development of the capital market. Because ethical behavior can bring economic rewards for companies.
Financial growth and development	Financial development refers to efficient financial systems. Financial systems with the functions of obtaining information about investment opportunities, monitoring the investments made, distributing risk, pooling savings, and also facilitating the exchange of goods and services reduce transaction costs and improve the allocation of resources and ultimately economic growth. Financial development is a multifaceted concept that, in addition to the monetary and banking dimension, also includes other dimensions and components such as financial liberalization, the quality of regulations and supervision governing this sector, technological advances, the level of competition and existing institutional capacities.

The model of financial reporting with the role of information behavior is designed in Figure (3).

8 Conclusion and discussion

The purpose of this research was to design a model of financial reporting with the role of information behavior (causal, intervening and contextual conditions; strategies and consequences) in Iran. The results of the research showed that the most important causal conditions that affect financial reporting with the role of information behavior are, respectively: information entropy, social pressure, risk appetite, inconsistent information, uniformity pressure, irregularities and anomalies. Individual characteristics, subjective judgments, environmental factors and requirements, clarifying accounting activities, disclosure of organizational information, disclosure of social responsibility, environmental incentives, environmental pressures and political characteristics. Also, according to experts, the characteristics of corporate governance, structural characteristics of the company, organizational risk management, planning and control and information system are also considered intervention factors for the model of financial reporting with the role of information behavior. In addition to these mentioned conditions, according to the opinion of the interviewees, they have also stated conditions as background conditions for the financial reporting model with the role of information behavior; These conditions include the implicit knowledge and experience of managers, the accounting

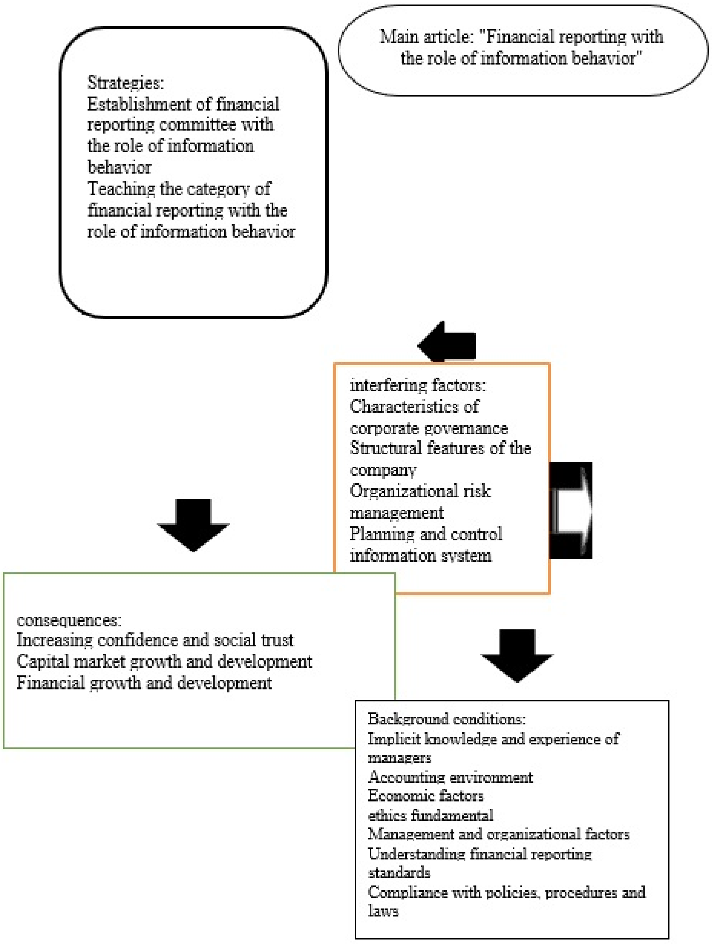

Figure 3: **Conceptual model of financial reporting with the role of information behavior**

environment, economic factors, ethical principles, managerial and organizational factors, the perception of financial reporting standards and compliance with policies, methods and laws as well. The findings of this research showed that for the model of financial reporting with the role of information behavior, strategies such as establishing a financial reporting committee with the role of information behavior and training the category of financial reporting with the role of information behavior are adopted. Finally, the coherent model showed that financial reporting with the role of information behavior leads to consequences such as increasing social trust and confidence, growth and development of the company, and increasing the quality of financial information.

According to experts, the semantic aspects of communication are not related to its technical issues, and the important thing is to choose a message from a set of possible messages. Therefore, information entropy is related to behavioral financial issues, and therefore, a strong selective pressure to transform information behaviors into mental principles or individual psychology through the important knowledge of genetic codes, and this affects financial reporting. According to experts, some of the common patterns of mental principles in the literature of behavioral finance and financial reporting, which were ultimately a single understanding from the perspective of entropy, were expressed as follows:

1. Principles of conservatism in financial reporting
2. Design or representation of collective or group behavior
3. Overconfidence
4. Avoidance of loss in winning (victory) and risk taking in loss

According to experts, the mandated social pressure increases the willingness of managers to strengthen financial reporting. Also, the probability of conservative reporting is much higher when there is social pressure, and operational and middle managers will try to fulfill the wishes and opinion of the company's CEO. Also, risk appetite is defined as the amount of risk that the company accepts in order to achieve its goals. According to experts, when the company's willingness to accept risk is less, the directive pressure from top managers causes financial managers to choose accounting policies that lead to financial reporting with a weak role of information behavior. According to experts, further processing of preference-inconsistent information can strengthen the effects associated with preference-inconsistent information. Congruent pressure is based on the theory of social comparison processes and usually happens when a person lacks sufficient knowledge and looks at the group as a guide or is in an ambiguous situation and compares his behavior with the group. According to experts, conformity pressure is a type of social influence that includes a change in belief or behavior to ultimately lead to a person's adaptation to a group. Usually, in financial reporting decisions, less attention has been paid to the effect of uniform pressure on financial reporting, and this issue is somewhat surprising.

According to experts, decision-making in uncertain conditions systematically departs from the financial theories of behavior and conventional economics. Therefore, the irregularities and anomalies arising from behavioral financial discussions talk about how people make decisions according to their preferences and cognitive biases. Therefore, in financial markets, decision makers and users of financial reports do not always behave logically, predictably and impartially, and based on psychological theories, people tend to keep certain events in their minds in the form of imaginations and sometimes these perceptions have an even greater impact on people's behavior than the events themselves, which causes information behavior in financial reporting. According to experts, personal characteristics are one of the categories of causal conditions, which, based on psychological theories, affect people's behavior. Some experts believed that "some financial managers have a series of personality traits that change their behavior over time. They believe that some people did not show their true personality at first, but over time, they show their true personality." and their behavior changes. Traits such as weak beliefs and morals, greed and greed, which these traits provide the causes of informational behavior. According to experts, the subjective judgments of individuals can originate from their perception. Perception is a process in which humans communicate with their surroundings. Therefore, people need to interpret, analyze and combine information in order to create an understanding and belief in relation to the experiences of appropriate informational behaviors consistent with the experience. As a result, when there are individual differences, people's perceptions and interpretations will also be different in the field of information behavior.

According to experts, environmental factors are the most important factors that encourage companies to report. Such as long-term executive perspective, accounting experience and subjective knowledge, company management culture. One of the characteristics of knowledge and experience based on mental knowledge; Skills are a deep understanding that leads to collective knowledge, norms and routines or organizational skills and ultimately provides financial reporting. According to experts, accounting activities should be transparent. Companies use accounting transparency for reliable information about their relative performance, financial position, investment opportunities, value and risk level. Companies need transparency to avoid stagnation and because of society's expectations. According to experts, human capital refers to education, knowledge, skills, learning, expertise and experience. Human capital disclosure is defined as disclosure of organizational information about employees' education, knowledge, learning skills, expertise and experiences in their tax report. According to experts, a report that affects business activity and even negative factors affecting it, such as employees, social participation, environmental concerns, and other ethical issues, is defined as social responsibility reporting. For this purpose, the social responsibility report is becoming bolder towards strengthening the environmental performance and improving the work environment and social welfare, which may be the best advertisement for a company. Most of the companies try to show themselves at the level of the whole market and industry during their recession, they pay attention to the factor of financial reporting, and many experts in this field pointed to companies that try to increase the standards related to financial reporting by planning. Another important factor that the experts mentioned in the interviews is the category of environmental pressures. In their opinion, by expanding and increasing the ability to respond to different groups. All groups are trying to satisfy all stakeholders in different ways.

According to experts, the political characteristics of Iran have caused many sanctions to be imposed against the country and Iranian companies (especially companies active in the capital market) in recent years. As a result, Iranian companies have been involved with fundamental problems and issues in recent years, and currently they cannot focus all their energy and focus on financial reporting issues. According to the interviewees, in order to pass through this historical path of the country, companies must have a vision and strategies.

The general suggestion about the findings of the research is that companies should put the necessary rules and regulations on the establishment and strengthening of financial reporting by emphasizing the role of information behavior and the theory of information entropy and the establishment of the internal control system. The findings of the research show that social pressure, willingness to take risks, inconsistent information, same color pressure, irregularities and abnormalities, individual characteristics, subjective judgments, environmental factors and requirements, clarifying accounting activities, disclosure of organizational information, disclosure of responsibility. Social, environmental incentives, environmental pressures and political characteristics are effective in weakening/strengthening financial reporting with the role of information behavior. Therefore, board members and company managers are suggested to pay more attention to the mentioned structures and include it in their decision-making models. Because these structures can be a basis for their decision making.

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