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Role of psychological structures in accounting-related decision making styles

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Abstract

Decision making can be considered as the brain of an organization and is able to give rise to individuals and organizations. On the other hand, it can lead to their failure. To do so, the aim of the current study is to evaluate psychological effects on accounting-related decision making (decision making styles). To examine psychological structures, these components were applied: shortsightedness, optimization, self-attribution bias, anchoring bias, ambiguity aversion. And to measure accounting-related decision making, decision making styles such as rational, intuitive, dependent, spontaneous and avoidant decision makings were used. In terms of purpose, this research is an applied one, and in terms of the method used for gathering data, it is descriptive-analytical as survey type according to structural modelling attitude. The population of the study is finance directors active in the capital market. To collect data standard questionnaire has been used. In this research, we put the light on the prediction of cause-and-effect relationships among (structure of corporate governance) and health of the company. The results showed that among psychological structures optimization has an influence on the intuitive decision, like that of imaginative power on spontaneous decision making, and self-attribution on spontaneous, avoidant, rational, intuitive, and dependent decision makings. Short-sightedness affects spontaneous, avoidant, and dependent decision making as well.

Keywords: Accounting-Related Decision Makings, Decision Making Styles, Psychological Structures
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1 Introduction

Nowadays, managers play a crucial role in the promotion of any organizations' performance and the decisions they make lead to achieving success or they fail [11]. Managers' decisions and their thoughts have a life-changing effect to advance organizational goals. But managers sometimes make decisions that are not in the favour of the company's shareholders, so that it leads to corruption of financial reports. In fact, earning management occurs when managers apply their judgment to financial reports and to record in a way that change in the content of financial reports misleads some shareholders in the way they think about the company's economic performance. Decision making is billed as one of the most pivotal processes in organizations and as the managers' main responsibility at all levels, in such a way that some experts believe that management equals decision making. Counter admits that without decision making having a plan, policy, and strategy is nonsense. Accounting knowledge that has been achieved through work

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experiences (direct) and education (indirect) affects decision making. Yet, accountants' specific experiences can develop accounting technical knowledge in addition to several influences on parameters and indexes. Special experiences affect individuals' attention towards a new interpretation of data. Specific experiences along with output data, performance evaluation based on outcomes and motivating for more outcomes reinforce relations between outcomes and assessments in individuals' subjective expression. The obvious results of these outcomes and the power of the relations between outcomes and assessments in individuals' minds make them use the outcomes when they assess others. Even, when they have knowledge about the quality of audiences' decision making and know the quality of decision making provides a better base for assessment, previous experiences along with evaluations based on the quality of decision making bring decision making with high quality. Therefore, individuals put their attention on the quality of decision making when they assess others.

Also, Fredrickson et al [9] predicted that repetition of assessments affects knowledge differently and its intensity is depended on the assessment type they have experienced (experience based on assessment type or based on the quality of decision making). It is expected that the impact of assessment-based experience based on outcomes is stronger when assessments are done repeatedly. Each extra assessment reinforces the relationship between outcomes and performance evaluation in individuals' minds. On the contrary, when individuals' assessments are based on the quality of decision making, outcome feedback is not relevant and that causes weaker relations between outcomes and performance evaluation. Fredrickson' results showed that individuals' experiences of performance evaluation simulate their attention and memory processing and question their initial beliefs based on assessment merit and decision making quality. However, in more complicated cases when data is more interpretative individuals 'initial beliefs can limit learning influence. Psychological research done based on probability learning with multiple symptoms illustrates that when individuals learn cause-and-effect relationships of observations they show no inclination to use observations equally. When outcomes of a specific action (for instance, decision related to the allocation of resources) commingle which may come from numerous reasons rise individuals' attentions towards consistent outcomes to initial theories and affect next decision makings while inconsistent outcomes to the theories decrease their attention. So that, individuals' learning would meet a lower rank [28].

According to the above descriptions, the aim of this study is to know the amount of accounting-related decisions towards psychological structures. Doing research involves widespread activations -in order to earn scientific achievements in an accurate search. Thus, in the accordance with studies done in our country about the impacts of psychological structures on decision making styles in the area of accounting, the current study has examined some components that had not been examined in previous research and there are not any similar ones. Thus, this research is going to answer this question: what influences do psychological structures have on accounting-related decision makings in Iranian companies active in its capital market?

To answer this question, we predict cause-and-effect relationships in psychological structures (short-sightedness, optimization, self-attribution bias, anchoring bias, and ambiguity aversion) and decisions related to companies accounting are studied.

It is expected that the results of the study be able to help managers make a proper decision in optimized accounting to psychological structures and make correct financial and investment decisions. This research has continued through raising theoretical foundations and literature review of related researches and also through explanation of methodology and its hypotheses are driven from theoretical foundations, and then explained the results of hypothesis testing. In the end, results and applicable suggestions are given.

2 Theoretical Foundations and Literary Review

One of the managers' main duties is to make a decision. Decision making deals with the identification of issues, determination of problem-solving supplant, choosing one of them, and execution of the chosen solution. In modern management literature, each of managers' responsibilities such as planning, organizing, controlling etc. mirrors a kind of decision making. The decision making process is a function of factors like subject, decision, decision maker, decision time, and more important one which is complicated variables in decision making [8]. Decision making stands for a mixture of knowledge, thought, feeling, and imagination, so this package is executable. More clearly, decision making means to choose a way among two or more ways. A decision is to choose a solution or action among a set of possible actions and other alternates. Uncertainty makes decision making hard and decreases certainty in choosing an alternate or action that may lead to the best performance [7]. To Herbert Simone, decision making is the heart of management and even it can be a synonym for management. He introduced his decision making theory as manager as decision maker. In his viewpoint, a decision maker is a person who in the crossways, in the moment of choosing, is ready to pave one of them. If we consider management as a synonym of decision making no longer choice is only a

way of other ways, but the term of decision making refers to the whole process. In hordes of organizations especially in administrative and public organizations decisions made are executed with different ratios. Decision making is the process of solving a question with difficulty and mostly is known as problem-solving [20]. Sensitive aspects of management duties might be decision makings, communications, regulations and leadership. To functionally fulfil these duties, management uses the decision process in the form of decision. Researchers believe that management and decision making are two words with the same meaning. In other words, a manager is recognized through his decision. In fact, decision making is the essence of management and mirrors managers' capabilities and abilities. On the other hand, the reason for organizations' success or failure can be traced in the realm of decision making by managers. It is why the quality of management is a function of decision quality and it is believed that decision alone is the most important role of managers. Because the quality of plans and programs, effectiveness of strategies and quality of results all are functions of the quality of decisions made by managers [27]. Decision making in organizations affairs is of such importance that some writers have defined organization as the network of decision making and management as the act of decision making. And it is because in the modern era managing organizations affairs can not only rely on personal intelligence and judgment but they should be based on scientific evaluations, accurate statistics and data and be done in accordance with specific principles and methods. Nowadays, the complexity of organizations clears the high costs of the organizational arrangements, the necessity of proper decision making, and rational decision making for managers. What managers need more than anything are easy-to-use, certain, and scientific tools to help them make a decision which they need every now and then. Quantitative techniques and mathematical tools are effective in this direction. Although in many organizations and organs decision making is a challenge as well as a crisis, many decisions are made based on experience and attitude not based on accurate evidence. Decision made this way -due to the lack of data and relations among data and objectives, failure to understand complicated aims and incorrect estimation- is a risk [17].

Decisions made by humans or organizations are accompanied by affections because the decision maker is full of hope to achieve their goals or they think there are no negative or dangerous outcomes. Therefore, Individuals have a strong opposite orientation to actions and reactions. The results usually would end the indecisive conflict which causes concerns. Concerns coming from decisive conflict destroy decision making process. Decisive conflict increases when a crucial decision is going to be made. It will be more sensitive when decision makers find out how important is the probability of losses from each solution. In other words, any decisions they make, face decisive conflict. But serious symptoms would come up when all solutions end in unacceptable results. These symptoms are worrisome, doubtful, swingy, and with pain. In the end, the decision will be made but they have to deal with roles [19].

Scott and Broz [25] in their study noticed individuals' decision making styles and their influential factors, their inner features, their differences and based on these classified 5 decision making styles. Individuals' decision making styles indicate a normal pattern which they apply in the time of decision making.

The TOPSIS method (decision-making method based on comparison with the ideal solution) was presented by Chen [4], and using Yoon and Hwang [30] theories, a multi-criteria method for identifying solutions from finite options was obtained, which is expressed as the following steps:

1. Calculate the normalized decision matrix (n_{ij})

$$i = 1, 2, ..., n \qquad j = 1, 2, ..., m \qquad n_{ij} = \frac{X_{ij}}{\sqrt{\sum_{j=1}^{m} X_{ij}^2}} \tag{2.1}$$

2. Calculate the normal weight matrix (v_{ij})

$$i = 1, 2, ..., n \qquad j = 1, 2, ..., m \qquad v_{ij} = w_i n_{ij} \tag{2.2}$$

w_i is the ith item that

$$\sum_{i=1}^{n} w_i = 1 \tag{2.3}$$

3. Determining the solution of positive and negative ideals

$$A^+ = \{v_1^+, ..., v_n^+\} = \left\{ \left(\max_j v_{ij} \mid i \in I \right), \left(\min_j v_{ij} \mid i \in j \right) \right\}$$
$$A^- = \{v_1^-, ..., v_n^-\} = \left\{ \left(\min_j v_{ij} \mid i \in I \right), \left(\max_j v_{ij} \mid i \in j \right) \right\} \tag{2.4}$$

i = Depending on the profit criteria
j = Depending on the cost criteria

4. Distance criterion calculation: the distance of each option from the ideal solution (positive ideal solution and negative ideal solution)

$$d_j^+ = \left\{ \sum_{i=1}^{n} (v_{ij} - v_i^+)^2 \right\}^{\frac{1}{2}}, \quad j = 1, 2, ..., m$$
$$d_j^- = \left\{ \sum_{i=1}^{n} (v_{ij} - v_i^-)^2 \right\}^{\frac{1}{2}}, \quad j = 1, 2, ..., m \tag{2.5}$$

5. Calculate proximity to the ideal solution. The proximity of the A_j option is defined by considering A^+

$$R_j = \frac{d_j^-}{(d_j^+ + d_j^-)}, \quad j = 1, 2, ..., m \tag{2.6}$$

Whenever that $d_j^+ \geq 0$ and $d_j^- \geq 0$
And as it is obvious: $R_j \in [0, 1]$

6. Ranking Options: We can even rank options in descending order.

The basic principle of the TOPSIS method is to select an option with the shortest distance from the positive ideal solution and the maximum distance from the negative ideal solution.

$$A^+ = \{\max v_{i1}, \max v_{i2}, ..., \max v_{i7}\} = \{0.195, 0.029, 0.028, 0.063, 0.063, 0.07, 0.175\}$$
$$A^- = \{\min v_{i1}, \min v_{i2}, ..., \min v_{i7}\} = \{0.148, 0.016, 0.02, 0.035, 0.035, 0.023, 0.058\} \tag{2.7}$$

The distance to the positive ideal:

$$d_{i+} = \{\sum_{j=1}^{7} (v_{ij} - v_j^+)^2\}^{0.5} \tag{2.8}$$

The distance to the negative ideal:

$$d_{i-} = \{\sum_{j=1}^{7} (v_{ij} - v_j^-)^2\}^{0.5} \tag{2.9}$$

Rational decision making: in this style individuals are aware of all solutions and they know the results of all decisions, so that they are able to organize the results based on priority (the most benefit) [12] and by using an optimization strategy maximize the chance of obtaining their goals [16]. Therefore, in this style individuals assess all possible solutions and after determination of their consequences they choose the best one.

2.1 Intuitive decision making style

Robbins [24] believes that this style is the unconscious process of decision making which is gained in the shadow of deducted experiences and is based on individuals' emotions and incidental learning. It does not necessarily act as an opposite to rational analysis, but they are complementary. So in this style, decision maker does not apply a systematic approach but uses his experiences and knowledge. Dependent decision making style: Parker et al [21] believe that this style shows a lack of independence in thought and action and they rely on other people's guidance and supports [12] and in this style, other people's knowledge plays a crucial part [25]. Thus, in this method, decision maker depends on others' beliefs and s/he is passive. Spontaneous decision making style: it shows an urgent situation when a person has to make the main decision without prior thought and in the shortest possible time [25]. But, it is possible that managers choose this style of decision making due to circumstances. However, because managers make a decision based on their experience and information, this style of decision making does not stand for irrational decision making. Avoidant decision making style: to Parker et al [21] this style means to postpone decision making when they face difficulties and to avoid any reactions to the matter. In this style, decision maker has a tendency to avoid any decision making and avoid decision making as much as possible [12]. It is possible to say that individuals here are afraid of decision making and they are worried about their decision consequences. Cognitive psychology considers the

human being as a data processer and resolver. Thus the point of view is looking for explaining behavior via examining ways that individuals notice available information, interpret and apply it. Cognitive psychology like the psychological viewpoint is into inner processes. But, this viewpoint puts more light on how individuals collect data and interpret it and apply it more than desires, needs, and motives. Unlike psychoanalysis, the pillar of psychology does not rely on motivations, feelings, or inner conflicts, but it relies on mental processes which we are aware of or can be aware of them easily. This attitude is in contrast to learning theories that consider outside perimeter to be the main reason for behaviors. Basically, the cognitive viewpoint notices the ways of problem-solving than personal history. In this view, relations between excitement, motivations, and cognitive processes and eventually overlapping between cognitive viewpoint and other attitudes will be turned out [2].

2.2 Short-sightedness bias

In short-sightedness bias (confirmation bias, tendency to be confirmed or admitted) tendency to search among data and interpret it in a way that a person looks for confirming their hypotheses. Due to this bias individuals have the tendency to accept those opinions which agree with their way of thinking. On the other hand, they ignore those ideas which are in conflict with theirs. Confirmation bias is one of the cognitive biases and it is systematically observed in inductive reasoning. This bias appears more in two conditions: first, when individuals gather or remind data act selectively and secondly is when interpreting vague evidence to confirm their current position. Confirmation bias is stronger when it comes to exciting or fanatical beliefs. We as human beings tend to agree with those whose views meet ours (in other words, we only care about insiders). In this way, based on common viewpoints, culturally we make a closed social network and unconsciously we refer to those attitudes to reinforce our cohesive beliefs. Some studies show that the internet plays an important role in the growth and sustainability of this bias. In this direction, we ignore those beliefs, facts, and assessments that challenge our built viewpoint or we do not care about them enough. This position leads us to accept our beliefs too much so that it makes us decide irrationally [29].

2.3 Optimization bias

Optimization is representativeness or making the process of decision making stereotypical. In other words, individuals estimate the probability of an accident according to its similarity to previous accidents. For instance, if a stock is offered in the market and investors observe a similarity between this new stock and the former one which was beneficial, they try to buy it. In this type, investors try to determine the success of their investment in for example company A via putting it in a familiar schedule. Such investors may classify company A as a company with value stock. On such occasions, they have a kind of assessment that can be classified this way. It is mostly seen that investors pave a wrong way due to a comfortable alternative to do a deep and comprehensive evaluation which is needed to assess an investment. Briefly, investors in a time of decision making behave stereotypically [29]. Self-attribution bias: This bias refers to individuals' tendency to attribute their success to their innate talents while attributing their failures to bad luck. Investors affected self-attribution after a successful period of investment (for one season or year) consider their success due to their talent and keenness and they ignore uncontrollable factors completely. Since investors too much believe themselves, this behaviour involves high risk. Generally, on such occasions, being overconfident decreases their skill in making decisions for the next plans. But, each business given to circumstances is totally independent and success or failure has nothing to do with its previous or next businesses. Self-attribution tendency attracts investors to hear what they love to. It means, when they are introduced to confirmative information, they attribute it to their keenness and talent. It makes the investors buy or maintain a stock that should not [23].

2.4 Imaginative power bias

Imaginative power describes a tendency in human beings that makes individuals think they are able to control outcomes or at least affect them while in reality, it does not come true. Elson Longer a member of Harvard University defines imaginative power bias as "expectation for a success that its probability is disproportionately higher than its objective and justified probability". He, in his study, observed that people who were allowed to choose their ticket in a lottery were ready to pay more to buy a ticket - compared to those who made a wager randomly. Previously, many researchers identified similar conditions in which individuals overestimated their ability to control themselves and they have deducted a kind of cause-and-effect relationships which were not available in reality although in their prediction they were sure about coincidence event [22].

2.5 Anchoring bias

Tversky and Kahneman [26] in their classification of biases they introduced a group as reveal behavior and they explained that when individuals are about to make decision or judge in ambiguous conditions it does not follow the Predictive statistical theory but confine to some revealed behaviors which are sometimes beneficial and sometimes are not beneficial. Discussing the biases of this group goes on [2].

2.6 Ambiguity aversion bias

the behavioral finance knowledge and finance management believe that humans do not tend to take a risk when they are facing unknown probability distribution. People generally doubt in ambiguity so that a tendency grows in them called ambiguity aversion. Ambiguity aversion also casts its shadow upon inadequate diversification. For example, investors may think that the domestic stock index is more familiar than the foreign one and involves less ambiguity. Another important aspect of ambiguity aversion aspects which is very crucial for investors is the ingeniousness effect. In this case, investors who imagine that they are more skilful and aware tend to act based on their personal judgment and opinions [14].

3 Literature Review

Verma and Rangnekar [27] in research entitled "general decision styles: evidences from India" examined the capability of general decision making styles among Indian managers and they found that all decision making styles (rational, intuitive, dependent, avoidant, and spontaneous ones) are common among Indian managers. Also, results showed that there is a significant correlation among the styles. Rotimi [20] in research entitled "relations among decision making styles, competitive Strategy and organizational performance among industrial organizations" surveyed the effects of decision style in the power of the relationship between competitive strategy and organizational performance in the African large organizations. They found that these organizations use all the decision making styles but they are in accordance with analytical and grammatical decision makings. The results also display that decision making styles affect organizational performance through competitive strategies. Lo et al [18] expressed that companies with having financial reports which are less eligible might Fraudulent reporting in financial statements more than other companies. Similarly, Blanco and Dhole [3] also presented some evidence regarding the negative relationship between eligibility of financial reports of companies and the probability of fraudulence. They evaluated the effect of eligibility and comparability on fraudulent reporting in capital markets. The findings of the study showed that companies with less eligible financial reports and less comparability may cheat more than other companies in financial statements. Hashemi and Pourzamani [15] evaluated decision making styles based on cheating reports and they showed that decision making styles (dependent, rational, spontaneous, and avoidant) have a significant influence on fraudulent reporting. So, the impact of the intuitive style component on fraudulent reporting was not observed. Ghaderi et al [10] discussed the development of accounting structures concept of sustainability and companies' financial health in the capital market of Iran and their findings showed that companies' financial health is under influence of sustainability structures (accounting voluntary donations, transparency in accounting mindset and social responsibility reporting). Companies to avoid financial helplessness and enjoy financial health should have sustainable accounting characteristics. Therefore, if investors and stakeholders cannot rely on this information, financial health may decrease. Abdolbaghi and Mirlohi [1] in research called lifecycle, studied financial helplessness and restructuring strategy and found that financial helplessness has a significant effect on management, performance and finance reconstructing. According to the evaluation of wide sources by researchers of the current study, none of foreign the studies mentioned above studied the effects of psychological factors on the decision making styles of companies. Also, there is not any research on this matter in Iran.

4 Research Hypothesis

Following Verma and Rangnkar's former researches [27] and Rotimi [20] to trace the role of psychological structures in decision making styles the edited model has been followed up tested directly and based on edited hypotheses:

The first hypothesis: short-sightedness affects rational decision making style.

The second hypothesis: short-sightedness affects intuitive decision making style.

The third hypothesis: short-sightedness affects dependent decision making style.

The fourth hypothesis: short-sightedness affects spontaneous decision making style.

The fifth hypothesis: short-sightedness affects avoidant decision making style.

The sixth hypothesis: optimization affects rational decision making style.

The seventh hypothesis: optimization affects intuitive decision making style.

The eighth hypothesis: optimization affects dependent decision making style.

The ninth hypothesis: optimization affects spontaneous decision making style.

The tenth hypothesis: optimization affects avoidant decision making style.

The eleventh hypothesis: self-attribution affects rational decision making style.

The twelfth hypothesis: self-attribution affects intuitive decision making style.

The thirteenth hypothesis: self-attribution affects dependent decision making style.

The fourteenth hypothesis: self-attribution affects spontaneous decision making style.

The fifteenth hypothesis: self-attribution affects avoidant decision making style.

The sixteenth hypothesis: imaginative power affects rational decision making style.

The seventeenth hypothesis: imaginative power affects intuitive decision making style.

The eighteenth hypothesis: imaginative power affects dependent decision making style.

The nineteenth hypothesis: imaginative power affects spontaneous decision making style.

The twentieth hypothesis: imaginative power affects avoidant decision making style.

The twenty first hypothesis: anchoring affects rational decision making style.

The twenty second hypothesis: anchoring affects intuitive decision making style.

The twenty third hypothesis: anchoring affects dependent decision making style.

The twenty forth hypothesis: anchoring affects spontaneous decision making style.

The twenty-fifth hypothesis: anchoring affects avoidant decision making style.

The twenty-sixth hypothesis: ambiguity aversion affects rational decision making style.

The twenty seventh hypothesis: ambiguity aversion affects intuitive decision making style.

The twenty-eight hypothesis: ambiguity aversion affects dependent decision making style.

The twenty-ninth hypothesis: ambiguity aversion affects spontaneous decision making style.

The thirties hypothesis: ambiguity aversion affects avoidant decision making style.

5 Methodology

The aim of the study is to predict cause-and-effect relationships between psychological structures and accounting-related decision makings of companies active in the capital market. This research in terms of purpose and collecting data method is applicable and analytical-descriptive based on structural modelling attitude. In terms of attitude, the research type is qualitative which has been used to understand the relationship between psychological factors effecting companies' accounting decisions and phenomenography strategy. This method was presented at Gothenburg University in Sweden in 1970 to have a deep knowledge of different concepts of a phenomenon by different individuals. Phenomenology as a method is a part of the interpretive paradigm and basically, it tries to find out individuals' different understanding of a given phenomenon by a particular group. Phenomenologists believe that they are able to understand phenomena fully if they count different concepts of a phenomenon and relate them in a wider structure. Phenomenology is based on the interpretivism paradigm. Interpretative researchers begin with this default that access to reality (the certain reality or a reality made by society) is only possible through social structures such as language, self-awareness and common conceptions. In this strategy, researchers try to understand the meanings individuals have about these phenomena. For hypothesis testing via structural equation modelling, the 3.2.7 version of Smart-pls was used. When the observation volume is low or does not have a normal distribution it is preferred to use software like Smart-pls [6]. Path model of least squares is defined by two sets of linear structural equations (internal model or structural model, and external model or measurement model).

The density function of the normal distribution probability is as follows:

$$f(x;\ \mu,\sigma^{2)} = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-(x-\mu)^2/(2\sigma^2)}, \quad x \in \mathbb{R} \tag{5.1}$$

In the least squares model, we display the values of the dependent variable in the matrices as follows:

$$X_{n\times(p+1)} = (1, X_1, ..., X_n)^T \tag{5.2}$$

$$Y_{n\times 1} = (y_1, ..., y_n)^T, \tag{5.3}$$

where

$$Y = X\beta + \varepsilon$$
$$E(\varepsilon) = 0$$

$$Var(\varepsilon) = \sigma^2 I_{n\times n} \tag{5.4}$$

From the least squares method, the square of error $\|Y - X\beta\|^2$ can be minimized and the optimal parameter can be reached. It means:

$$\hat{\beta}_{ols} = (X^T X)^{-1} X^T Y \tag{5.5}$$

The component generation algorithm for $k \leq p$ is as follows:

$$\begin{cases} \text{for } j = 1, ..., p; & X_j^{(0)} = X_j \\ \text{for } m = 1, ..., k; & Z_m = \sum_{j=1}^{p} \langle X_j^{(m-1)}, Y\rangle X_j^{(m-1)} \\ \text{for } j = 1, ..., p; & X_j^{(m)} = X_j^{(m)} - \frac{\langle Z_m, Y\rangle}{\langle Z_m, Z_m\rangle} Z_m, \quad \hat{Y} = \bar{Y}1 + \sum_{m=1}^{k} \frac{\langle Z_m, Y\rangle}{\langle Z_m, Z_m\rangle} Z_m \end{cases} \tag{5.6}$$

which $\hat{Y}$ is the same amount of prediction.

The structural model determines relationships between latent variables and observed indicators. Also, an online or in-person questionnaire 6 methods was used for collecting data, and a structural equation model based on least squares 7 was applied in the inference stage. In this direction, based on the dedicated method of this modelling [6], the maximum value of sample out of 10 equals the most relations in structural section and to distribute the questionnaire in financial parts of studied companies via social network online and in-person, was gathered. 90 companies referred to the distribution of questionnaires and 18 of them were rejected due to inadequate or inaccurate data. The 72 of them were billed as accurate observations. Regarding sufficiency of the value sample in structural equation modelling should say that to gain valid and generalized results, based on Chin et al [5], the volume sample must be estimated 10 cases to each parameter. Other studies have suggested 5 cases to each parameter as well [13]. Therefore, according to the structural modelling of this research, given observations (questionnaire-company) (72 cases) are statistically adequate. In the current study, endogenous latent variables (decision making styles -accounting-related decision makings), independent variables (psychological factors) have been assessed via a standard questionnaire. The questions have been standardized. In addition, to develop and customize the research instruments in harmony with the country's condition and its validation university figures' and elites were used. Table 1 figures out data related to the variables of the research.

6 Findings

82 percent of respondents of financial or accounting managers were men. Also, their educational levels were master or above and it is worth mentioning that these individuals in terms of accepting to answer and the quality of answering participated better. In the research mod, variables were modelled as higher reflective structures. The research stages and methods are shown in table 2.

To assess the measurement model (external model), the sustainability and validity of the structures and indicators are evaluated. Therefore, composite reliability Alfa for each mod structure was 7.0. Also, all indicators enjoyed required sustainability. To survey the validity of model structures, convergent and diagnostic validity were applied. The mean standard of extracted variance is more than 5.0 for assessing the convergent validity of all structures of the model. Since the root meaning of extracted variance in the diagonal matrix is more than correlation with structure or

Table 1: The variables of the research model

Structure	Role	Type	Structure	Question source
Psychological factors: • shortsightedness • optimization • self-attribution • imaginative power • anchoring • ambiguity	Independent	Perceptional	Reflective	Yao, Peng [29]
Decision making styles: • Rational • Intuitive • Dependent • Spontaneous • Avoidant	Latent	Perceptional	Reflective	Scott and Bruce [25]

Table 2: Summary of data analysis stages

Estimation of the measurement model (Internal validity)	Stability	Indexes stability	
		Examination of being one-dimensional	Cronbach's alpha
			Composite reliability
	validity	Convergent and diagnostic validity	
		Discriminant validity	Fornell & Larcker criteria
		Structural correlation and multi-colinearity (VIF)	Shared cross validation
Assessment of the structural model (External validity)	Estimation of path coefficient		
	Coefficient of determination (R^2)		
	Predictor relation		
Examine indexes of model quality	Shared cross validation		
	Redundancy cross validation		
	GOF criteria and SRMR		
Testing hypotheses	Examination of Z significance coefficient		

Table 3: Examining the quality of measurement model

Structure	Cronbach's Alfa	Composite reliability	Convergent validity
Short-sightedness bias	0.894	0.862	0.548
Optimization bias	0.947	0.966	0.904
Self-attribution bias	0.964	0.973	0.878
Imaginative power bias	0.901	0.931	0.772
Anchoring bias	0.628	0.754	0.450
Ambiguity bias	0.966	0.978	0.937
Rational decision Making style	0.955	0.971	0.917
Intuitive decision Making style	0.850	0.930	0.869
Dependent decision Making style	0.960	0.974	0.926
Spontaneous decision Making style	0.830	0.922	0.855
Avoidant decision Making style	0.953	0.966	0.887

the structure with other structures, so that the mentioned criteria is acceptable as well. Thus, the quality of model structures has appropriate validity.

To assess structural model (internal one), after calculation of path coefficient, factor loads, and determined variances of variables by the PLS algorithm, significance of the path and factor loads were examined using bootstrap method in order to achieve values of t. The results of significance of the paths is shown in table 4.

As in table 4 it can be observed the relationship between research structures and their significance, the path of optimization and intuitive decision making is significant ($P < 0.087$). So that according to the seventh hypothesis the effects of optimization on decision making style are verified. The impacts of imaginative power path on spontaneous decision making are meaningful ($P < 0.043$). Thus, according to the nineteenth hypothesis, the effects of imaginative

Table 4: Examination of relationship between research structures and their significance

Path	Path Coefficient	Standard deviation	Significance level	Interpretation
Ambiguity bias -> spontaneous decision making style	0.084	0.162	0.602	Rejected
Ambiguity bias -> avoidant decision making style	0.111	0.108	0.295	Rejected
Ambiguity bias ->rational decision making style	0.187	0.166	0.230	Rejected
Ambiguity bias -> intuitive decision making style	-0.013	0.190	0.968	Rejected
Ambiguity bias -> dependent decision making style	0.212	0.176	0.199	Rejected
Optimization-> spontaneous decision making style	-0.133	0.166	0.436	Rejected
Optimization-> avoidant decision making style	-0.083	0.095	0.343	Rejected
Optimization->rational decision making style	0.028	0.222	0.795	Rejected
Optimization-> intuitive decision making style	0.358	0.197	0.0.087	Not rejected
Optimization-> dependent decision making style	0.051	0.148	0.616	Rejected
Imaginative power bias-> spontaneous decision making style	0.150	0.071	0.043	Not rejected
Imaginative power bias-> avoidant decision making style	0.000	0.047	0.874	Rejected
Imaginative power bias-> rational decision making style	-0.021	0.082	0.779	Rejected
Imaginative power bias-> intuitive decision making style	-0.119	0.093	0.283	Rejected
Imaginative power bias-> dependent decision making style	-0.033	0.078	0.659	Rejected
Self-attribution bias-> spontaneous decision making style	0.517	0.163	0.001	Not rejected
Self-attribution bias-> avoidant decision making style	0.216	0.073	0.004	Not rejected
Self-attribution bias-> rational decision making style	0.501	0.189	0.008	Not rejected
Self-attribution bias-> intuitive decision making style	0.577	0.200	0.003	Not rejected
Self-attribution bias-> dependent decision making style	0.363	0.163	0.014	Not rejected
Anchoring bias-> spontaneous decision making style	-0.162	0.139	0.170	Rejected
Anchoring bias-> avoidant decision making style	0.058	0.086	0.463	Rejected
Anchoring bias-> rational decision making style	-0.087	0.163	0.494	Rejected
Anchoring bias-> intuitive decision making style	0.050	0.175	0.911	Rejected
Anchoring bias->dependent decision making style	-0.034	0.159	0.650	Rejected
Short-sightedness bias-> spontaneous decision making style	0.495	0.171	0.004	Not rejected
Short-sightedness bias-> avoidant decision making style	0.694	0.095	0.000	Not rejected
Short-sightedness bias-> rational decision making style	0.275	0.171	0.125	Rejected
Short-sightedness bias-> intuitive decision making style	-0.047	0.187	0.770	Rejected
Short-sightedness bias->dependent decision making style	0.358	0.179	0.066	Not rejected

power on spontaneous decision making style are significant ($P < 0.001$). So the fourteenth hypothesis as the effects of self-attribution on spontaneous decision making is confirmed. Also, the self-attribution path and avoidant decision making style are significant ($P < 0.004$), therefore according to the fifteenth hypothesis self-attribution effects on avoidant decision making style are confirmed. The path of self-attribution has a meaningful impact on rational decision making style ($P < 0.008$). So, according to the sixteenth hypothesis self-attribution effects on rational decision making style are confirmed. The path of self-attribution has a meaningful impact on intuitive decision making style ($P < 0.003$). According to the twelfth hypothesis, self-attribution effects on intuitive decision making style are confirmed. The impact of the path of self-attribution on dependent decision making style is meaningful ($P < 0.014$), so that the thirteenth hypothesis is confirmed.

The short-sightedness path is significant to spontaneous decision making style ($P < 0.004$). So that, based on

the fourth hypothesis, short-sightedness impacts on spontaneous decision making style are confirmed. The short-sightedness path is significant to avoidant decision making style ($P < 0.000$). Therefore, according to the fifth hypothesis short-sightedness effects on avoidant decision making style are confirmed. The short-sightedness path is significant to dependent decision making style ($P < 0.066$). So, according to the third hypothesis short-sightedness effects on dependent decision making style are confirmed. In measurement and structural models, unity means was used to measure the external model, and coefficient of determination R^2 was used to fit the structural model. The amount of unity mean shows the number of changes of indicators that is justified by the corresponding structure and researchers introduced the acceptable number for statistical unity as 5.0. According to number R^2 that indicates the capability of the model in the description of the structure, the given model enjoys an appropriate fit.

Table 5: Examination of the quality of structural model and goodness of fit

Model/Structure	SRMR	R^2	R^{2adj}	F^2
Rational decision making style	0.111	0.829	0.804	0.073
Intuitive decision making style				0.146
Dependent decision making style				0.192
Spontaneous decision making				0.046
Avoidant decision making style				0.0461

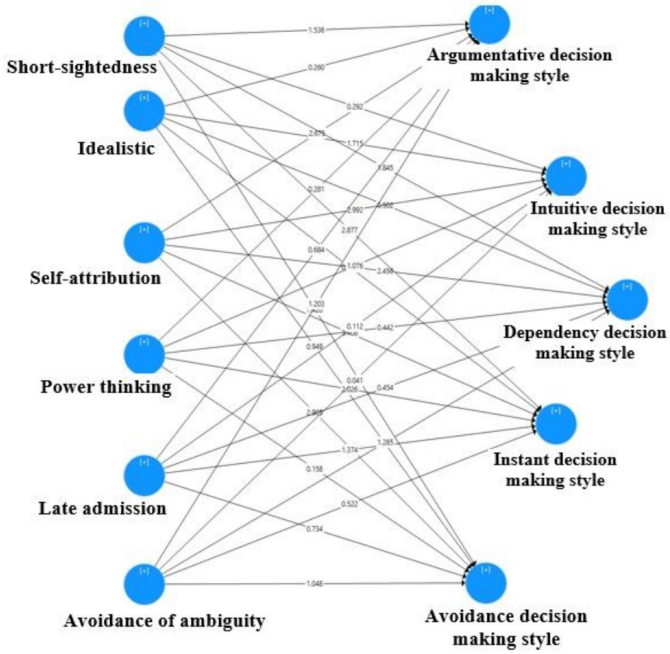

Figure 1:

7 Conclusion

Cognitive psychology considers humans as a data processing existence. Such a view tries to clarify through examining ways in which individuals give their attention to available information, so they interpret it and then use it. Similar to psychoanalysis, cognitive psychology cares about internal processes. But in such a viewpoint, how individuals obtain information, how they interpret it and finally how they apply it are more highlighted than desires, needs, and motivations. Unlike psychoanalysis, psychology relies on mental processes that we are aware of rather than motivation, feelings, and hidden conflicts. This approach stands against learning theories that consider the external environment as the main reason for behavior. Basically, the cognitive approach notices thoughts and ways of problem-solving rather than personal history. In this view, relationships among existing, motivations, and cognitive processes and as a result overlapping among cognitive approaches and other attitudes will be turned out [2].

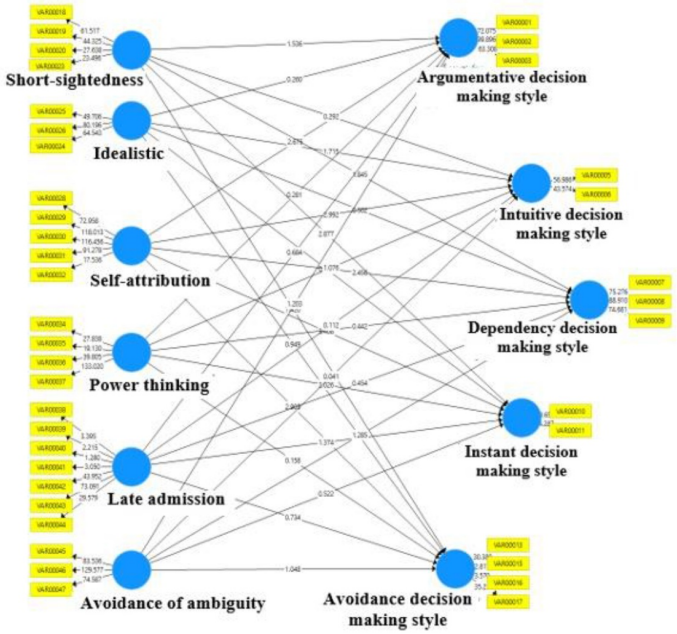

Figure 2:

The current research suggests a new psychological structure, and an accounting-related decision and emphasizes decision making styles. Therefore, here different Psychological structures like (ambiguity aversion, optimization, imaginative power, self-attribution, and short-sightedness) and decision making styles are identified in the accounting area and in this way some hypotheses have been designed and they were evaluated by available information. Overall, there is an evaluation that believes that psychological structures are effective.

In hypothesis tests, the effects of optimization on intuitive decision making are confirmed. In other words, optimization leads to reinforcement of intuitive decision making style in accounting. This finding meets the results of Verma and Rangnekar's [27]. Also, self-attribution effects in spontaneous, avoidant, rational, intuitive, and dependent decision making styles are confirmed. In other words, self-attribution makes decision making styles weak in decision making for accounting. This finding meets Verma and Rangnekar's [27].

According to the results of the mentioned hypotheses, it is necessary to present new solutions to make an optimized decision in accounting to reinforce psychological structures related to financial managers. To do so, we recommend managers, potential and actual financial managers pay more attention to psychological factors and consider them in their decisions. That is because they are crucial factors in optimized decisions in accounting and they can be a base for decision making.

By doing this research a new path will be paved and to be continued it requires new studies. Therefore, for the next research, it is suggested to consider the governance culture of companies in decision making styles in different conditions and industrial organizations and also the effects of the governance culture of companies on decision making styles based on other theories. Also, like all research, this research suffers from some restrictions that should be pointed out. Lack of access to all accepted companies in the Tehran stock exchange was a limitation that decreases statistical samples.

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