

Identifying the Dimensions and Components of Knowledge-based Decision-making and Presenting an Effective Model

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Abstract: The objective of this study was to identify the dimensions and components of knowledge-based decision-making and to present an effective model. The statistical population of the present study consists of two groups. The first group consists of experts who are familiar with knowledge-based decision-making theories that their number is unlimited and scattered across the country. They were selected purposefully and their opinions were applied in this study in the formulating and designing of the model. The second group consists of top-level, low-level, and middle-level managers of the Iranian National Tax Administration (n=2115), who are working in the tax affairs of Iran's provinces and cities. According to the Cochran formula, 325 of them were selected as samples. The methodology of this study was descriptive-survey and knowledge-based decision-making. A questionnaire with a validity of 93.8 and reliability of 94.6% was used to collect the data. Structural equation modeling through LISREL 8.8 version software was used to analyze the data. Based on the results, the power of the relationship between the dimensions and components of knowledge-based decision-making (performance factors, behavioral factors, attitudinal factors, and structural factors) in the Iranian National Tax Administration was at a desirable level. The t-test statistic was also larger than the critical t-value of 1.96 at a 5% error level and showed a significant correlation. Based on the fitted models, it can be stated that the knowledge-based decision-making dimensions and components of the Iranian National Tax Administration have a relationship with each other and this relationship is direct. **Keywords:** Knowledge-Based Decision-Making, Effectiveness, Structural Equation Modeling, Iranian National Tax Organization.

1. INTRODUCTION

Nowadays, organizations have advanced technologies that require the acquisition, management, and exploitation of knowledge and information to improve efficiency and, most importantly, decision-making. Knowledge management is a tool through which organizations

can manage the information and knowledge to make more effective decisions (Mina et al., 2014). Due to their critical role, managers in the tax administration, like other administrations, require making decisions based on facts and valid to make effective decisions. In line with changes in the approach of different individuals and organizations, the phenomenon of tax evasion by taxpayers and tax clients is observed in the field of taxation, which is a major challenge for the Iranian national tax administration. Hence, managers of this organization need to be flexible and accept the changes (Vaezi et al, 2019). One of the key tools to cope with the changes and success of this organization is the application of a knowledge management system and making knowledge-based decisions. In this regard, the presence of extensive ways of receiving tax from taxpayers and clients has increased the importance and need for a data-based and knowledge-based decision-making mechanism and the use of knowledge management as a facilitator and supporter of the decision-making system (Hadizadeh Moghaddam & Tehrani, 2019).

Review of literature

- (Brown, 2016) carried out a study entitled “Designing a knowledge-based decision-making model based on organizational development in Barcelona’s public administrations. The results revealed that the components of functional factors including, thinking and analysis, confidence, risk-taking, components of structural factors, including appropriate teaching practices for applying ideas, organizational culture, organizational structure, organizational climate, and components of motivational factors, including organizational incentives, reward system, welfare facilities have a significant relationship with organizational development in public administrations of the Barcelona city.

- (Hassan & Ahmed, 2018) conducted a study entitled “Assessing the relationship between managers’ knowledge-based decision-making in Syrian public administrations. The results revealed a negative significant relationship between rational and intuitive knowledge-based decision-making, between rational knowledge-based decision-making and avoidance knowledge-based decision-making and a positive significant relationship between intuitive knowledge-based decision-making and immediate knowledge-based decision making. Also, there is a positive and significant relationship between knowledge-based avoidance decision making and dependency and immediate knowledge-based decision-making.

- (Morgeson, 2018) conducted a study entitled “Investigating the relationship between coaches’ knowledge-based decision-making and their level of competences (a case study of Spanish first-class football clubs)”. The results showed that there was a positive and significant relationship between coaches’ knowledge-based decision-making and their competence in Spanish first-class football clubs.

- (Barbuto, 2018) conducted a study entitled “Knowledge-based decision-making model for managers to develop their management competence in commercial banks in Barcelona, Spain. The results showed that the knowledge-based decision making of managers has a positive and significant effect on the development of their managerial competence in commercial banks in Barcelona, Spain.

The theoretical framework of research

The present study aims to identify the dimensions and components of knowledge-based decision-making and to present an effective model in the Iranian national tax administration. Accordingly, to achieve the theoretical framework of research as the basis of the research, considering the novelty of the research subject, the researcher not only reviewed the results of other studies, especially the studies conducted abroad but also used the opinions of the experts to identify the main variables of the research and ultimately to achieve the theoretical

framework. Performance factors: It is a general construct that refers to one's performance in the organization and describes how the person uses his or her ability to perform organizationally and the assigned tasks. The components of this dimension are as follows:

1-Group collaboration and teamwork: It is the interaction and collaboration of the organization's members to achieve predetermined goals. Thinking and analyzing: topics and arguments that involves understanding and applying what have been acquired and learned by people in today's issues (Hadizadeh Moghaddam & Tehrani, 2019).

2) Behavioral factors: It includes the behaviors that characterize the communication, behaviors, and conduct of individuals with issues and the way of their coping with them.

3) Attitudinal factors: It includes the behaviors that determine the level of attitudes, views, and theories of people on issues and their way of their coping with these issues. The components of this dimension include Work and innovation culture: It is the process of promoting and enhancing the various aspects of work and business culture to achieve the desired goals and objectives that provide the appropriate context for growth and excellence and the development of creativity and innovation. Future-orientation: It involves the process of a systematic effort to look at the long-term future of science, technology, environment, economics, and community with the aim of identifying emerging technologies and enhancing strategic areas that will probably bring the most economic and social benefits (Bavlar & Orsova, 2016).

4) Motivational factors: It refers to specific behaviors to guide the organization's members towards a specific goal and to meet the needs and develop the capabilities and job satisfaction to serve the organization honestly (Mina et al., 2014). The components of this dimension include Salary: It refers to a list through which corporations announce the wages, salaries, rewards, etc. to employees (Crossley & Highhouse, 2005).

5) Structural factors: The methods used by an organization to give an order for individuals and tasks so that they can perform the tasks and achieve their goals. The components of this dimension include a sense of responsibility and social commitment at the workplace: Being responsible for performing all organizational tasks at the right time and having sufficient and necessary commitment to the organization and the job (Donate & Sánchez de Pablo, 2015). Knowledge-based decision-making: As a process, it is looking for a subject with agreed criteria. The appropriate information is collected and shared with decision-makers. Then, a decision is made with an agreed opinion (Hadizadeh Moghaddam & Tehrani, 2019).

The conceptual model of research

The conceptual model of research has been illustrated in (Figure 1).

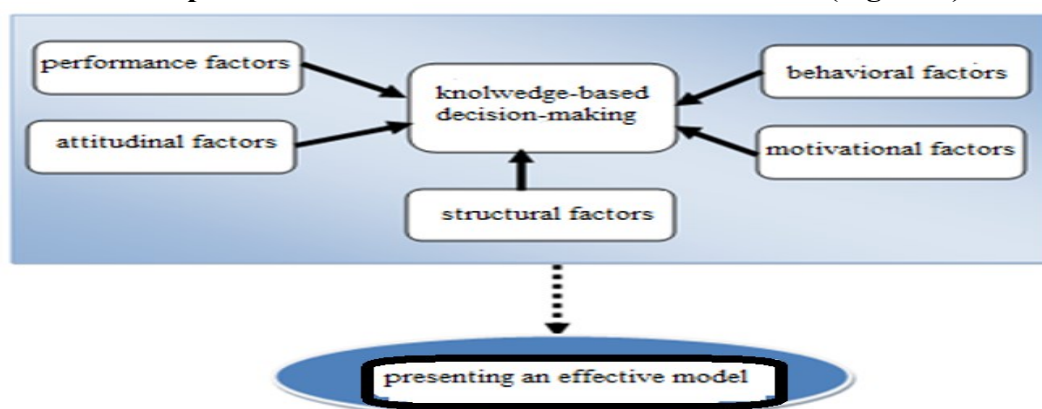


Figure 1. The research conceptual model

The main question of research

Is there a significant relationship between the dimensions and components of knowledge-based decision making in the Iranian National Tax Administration?

The secondary questions of research

1- Is there a significant relationship between the performance factors in the Iranian National Tax Administration?

2- Is there a significant relationship between behavioral factors in the Iranian National Tax Administration?

3- Is there a significant relationship between attitudinal factors in the Iranian National Tax Administration?

4- Is there a significant relationship between the motivational factors in the Iranian National Tax Administration?

5- Is there a significant relationship between structural factors in the Iranian National Tax Administration?

2. RESEARCH METHODS

The present study is a descriptive and correlational study in terms of method, an applied and developmental study in terms of objective, and a field study in terms of the data collection method. The statistical population of this study consists of two groups:

The first group consists of experts who are familiar with knowledge-based decision-making theories that their number is unlimited and scattered across the country. They were selected purposefully. The research inclusion criteria included having scientific research and articles related to the research subject, availability, experience, relevant field of study, Ph.D. level of education, teaching at university. In this research, their opinions were used in designing an effective model of the dimensions and components of knowledge-based decision-making in Iranian national tax administration. Non-random sampling method was used to select the appropriate sample from a population of experts and university professors. Accordingly, 15 individuals were selected from a population of experts and university professors who met the required criteria to select the appropriate sample. The second group consists of top-level, low-level, and middle-level managers of the Iranian National Tax Administration (n=2115), who are working in the tax affairs of Iran's provinces and cities. According to the Cochran formula, 325 of them were selected as samples using the stratified sampling method. A rank method was used for selecting the provinces based on a study entitled "An analysis on the distribution of economic development indices in the Iranian provinces with 25 economic indicators of the level of economic development and ranking of the provinces of Iran". The factor analysis method was used to assess the level of economic development and rank the provinces. The provinces of the country were divided into specific categories based on their rank of economic development and each of them was classified into four developed, relatively developed, less developed and deprived groups (Zarrabi and Shahivandi, 2010, p. 25). (Table 1) illustrates the statistical sample size of the Social Security Organization separately for each selected province.

Table 1. Statistical sample size of social security organization separately for each selected province

Province type	Row	Province name	Sample size
Developed	1	Tehran	98
	2	Esfahan	43
	3	Khorasan Razavi	41

Relatively developed	4	Kerman	31
	5	Gilan	31
Less developed	6	Golestan	22
	7	Kermanshah	19
	8	Semnan	21
Deprived	9	Sistan and Baluchestan	19
Total			325

In the present study, to collect the required data, a questionnaire consisting of 90 five-option questions on the dimensions and components of knowledge-based decision making was used. After obtaining the opinions of the experts, the number of items decreased to 65 five-option items ranging from completely appropriate to completely inappropriate. (Table 2) illustrates the characteristics of the questionnaire of dimensions and components of knowledge-based decision-making in the Iranian National Tax Administration.

Table 2. Characteristics of a questionnaire of knowledge-based decision-making dimensions and components in the Iranian National Tax Administration

Component	Indicator
Performance factors	Group collaboration and teamwork
	Thinking and analyzing
	Use of new technologies
	Beliefs
	Self-confidence
	Risk-taking
Behavioral factors	Work culture and innovation
	Future-orientation
	Planning for future challenges
	Changing organizational issues and decision-making power
Attitudinal factors	Work culture and innovation
	Future-orientation
	Planning for future challenges
	Changing organizational issues and decision-making power
Motivational factors	Salaries and wages
	Organizational incentives
	Reward system
Structural factors	A sense of responsibility and social commitment at the workplace
	Information knowledge in the work area
	Appropriate teaching method for making the ideas applied
	Organizational culture

	Organizational structure
	Organizational climate

The research questionnaires were evaluated and approved by 15 experts in terms of conceptual and face validity and then content validity ratio or CVR was used to assess its content validity. The formula for this method is as follows:

$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

The validity of the questionnaire was calculated at 0.93.8, which is acceptable. According to the calculations, the reliability of the questionnaire (dimensions and components of knowledge-based decision-making) was calculated at %94.6 using Cronbach's alpha, which is greater than 0.7 and acceptable. The data were analyzed using structural equation modeling through LISREL 8.8 software.

3. RESULTS

Investigating the main research question: Is there a significant relationship between the dimensions and components of knowledge-based decision-making in the Iranian National Tax Administration?

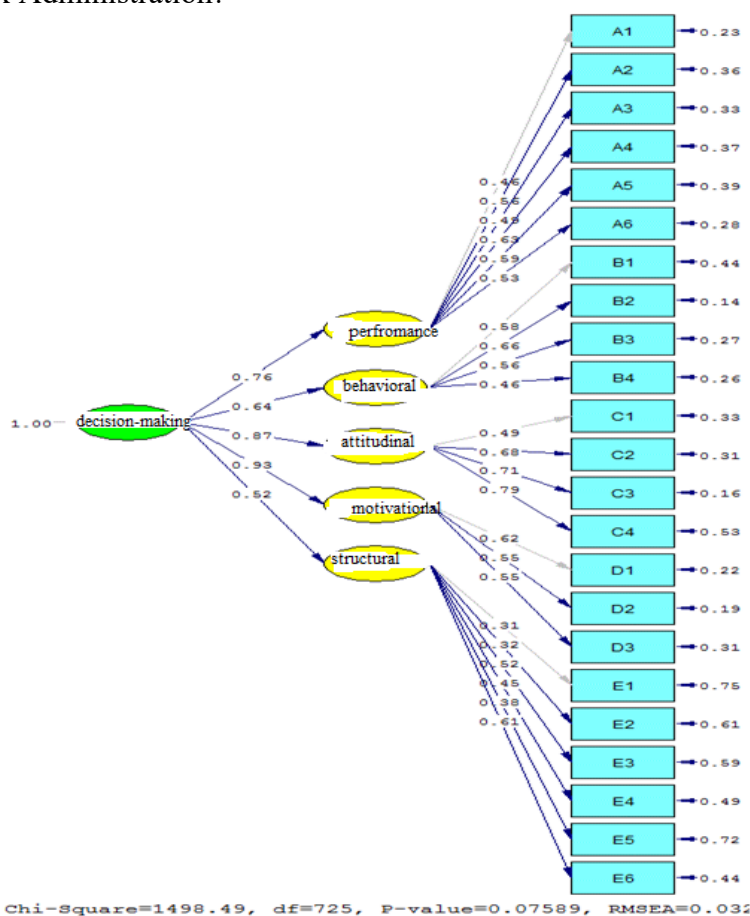


Diagram 1. Results of confirming the final model of the relationship between the dimensions and the components of knowledge-based decision-making

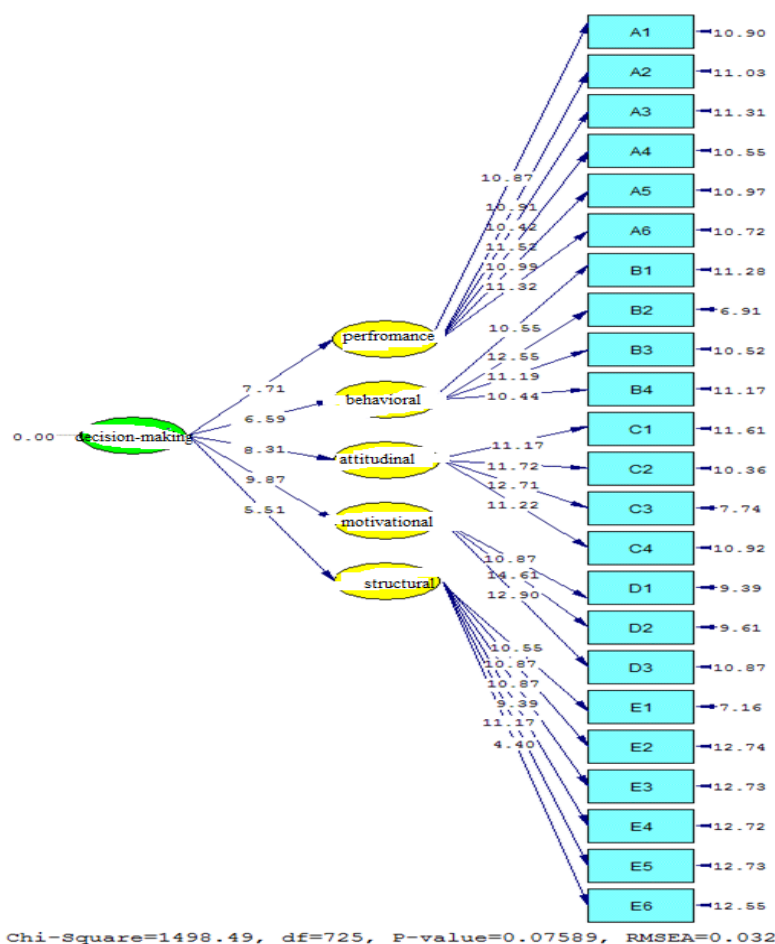


Diagram 2. The t-value statistic of the results of confirming the final model of the relationship between the dimensions and the components of knowledge-based decision-making

According to (Diagram 1) and (Diagram 2), the power of the relationship between the variables of performance factors and knowledge-based decision-making was calculated at 0.76, indicating a desirable correlation. The t-test statistic was also obtained at 7.71, which is greater than the critical t-value of 7.96 at the 5% error level, indicating that the observed correlation is significant. Also, the power of the relationship between the variables of behavioral factors and knowledge-based decision-making was calculated at 0.64, indicating a desirable correlation. The t-test statistic was also 6.59, which is greater than the critical t-value of 1.96 t at the 5% error level, indicating that the observed correlation is significant. Also, the power of the relationship between the variables of attitudinal factors and knowledge-based decision-making was calculated at 0.87, indicating a desirable correlation. The t-test statistic was also 8.31, which is greater than the critical t-value of 1.96 t at the 5% error level, indicating that the observed correlation is significant.

Also, the power of the relationship between the variables of motivational factors and knowledge-based decision-making was calculated at 0.93, indicating a desirable correlation. The t-test statistic was also 9.87, which is greater than the critical t-value of 1.96 t at the 5% error level, indicating that the observed correlation is significant. Also, the power of the relationship between the variables of structural factors and knowledge-based decision-making was calculated at 0.52, indicating a desirable correlation. The t-test statistic was also 5.51,

which is greater than the critical t-value of 1.96 t at the 5% error level, indicating that the observed correlation is significant. Therefore, based on the observations, it can be stated that there is a significant relationship between the dimensions and components of knowledge-based decision making in the Iranian National Tax Administration and the first hypothesis is confirmed.

The output of the LISREL software indicates the appropriateness of the proposed research model. (Table 3) presents the indices for fitting the proposed research model.

Table 3. Fitness indices of the main research model

Index	Reported value	Acceptable value
RMSEA	032.0	Equal or smaller than 0.9
CMIN/DF	066.2	Equal or smaller than 0.9
GFI	97.0	Equal or smaller than 0.9
AGFI	94.0	Equal or smaller than 0.9
CFI	99.0	Equal or smaller than 0.9
NFI	97.0	Equal or smaller than 0.9
TLI	96.0	Equal or smaller than 0.9
IFI	95.0	Equal or smaller than 0.9

Secondary Question 1- Is there a significant relationship between performance factors in the Iranian National Tax Administration?

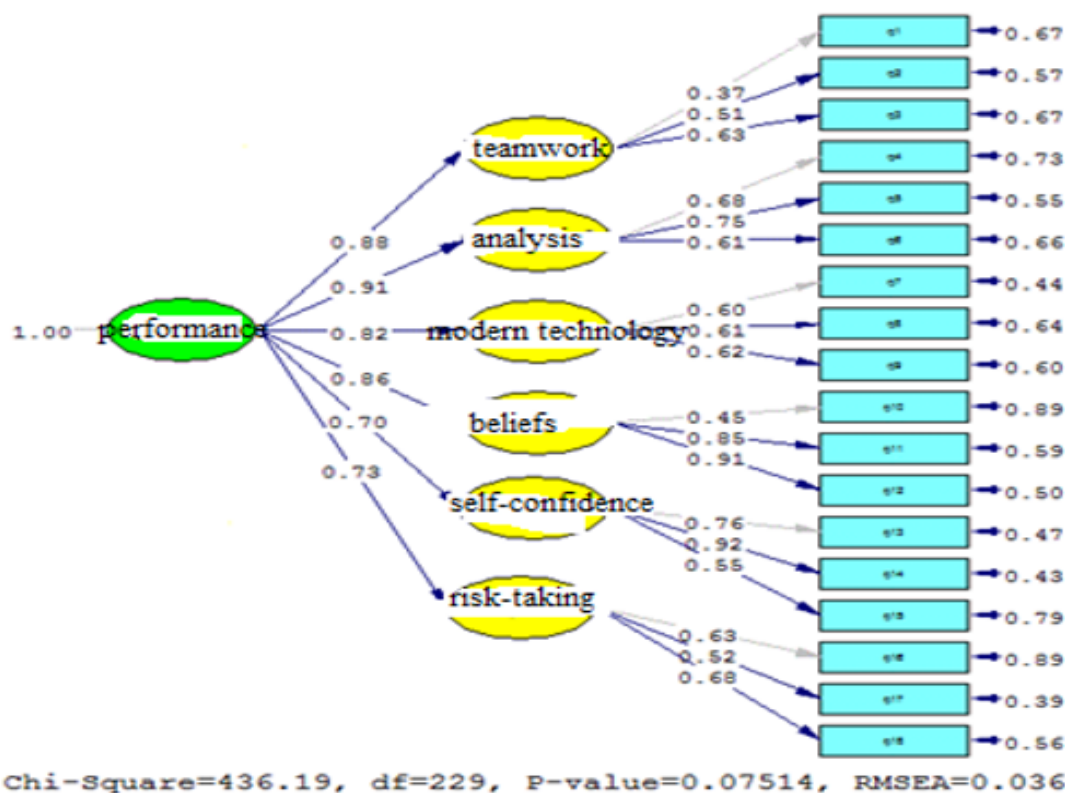


Diagram 3. Results of confirming the final model of the relationship between performance factors in the Iranian National Tax Administration

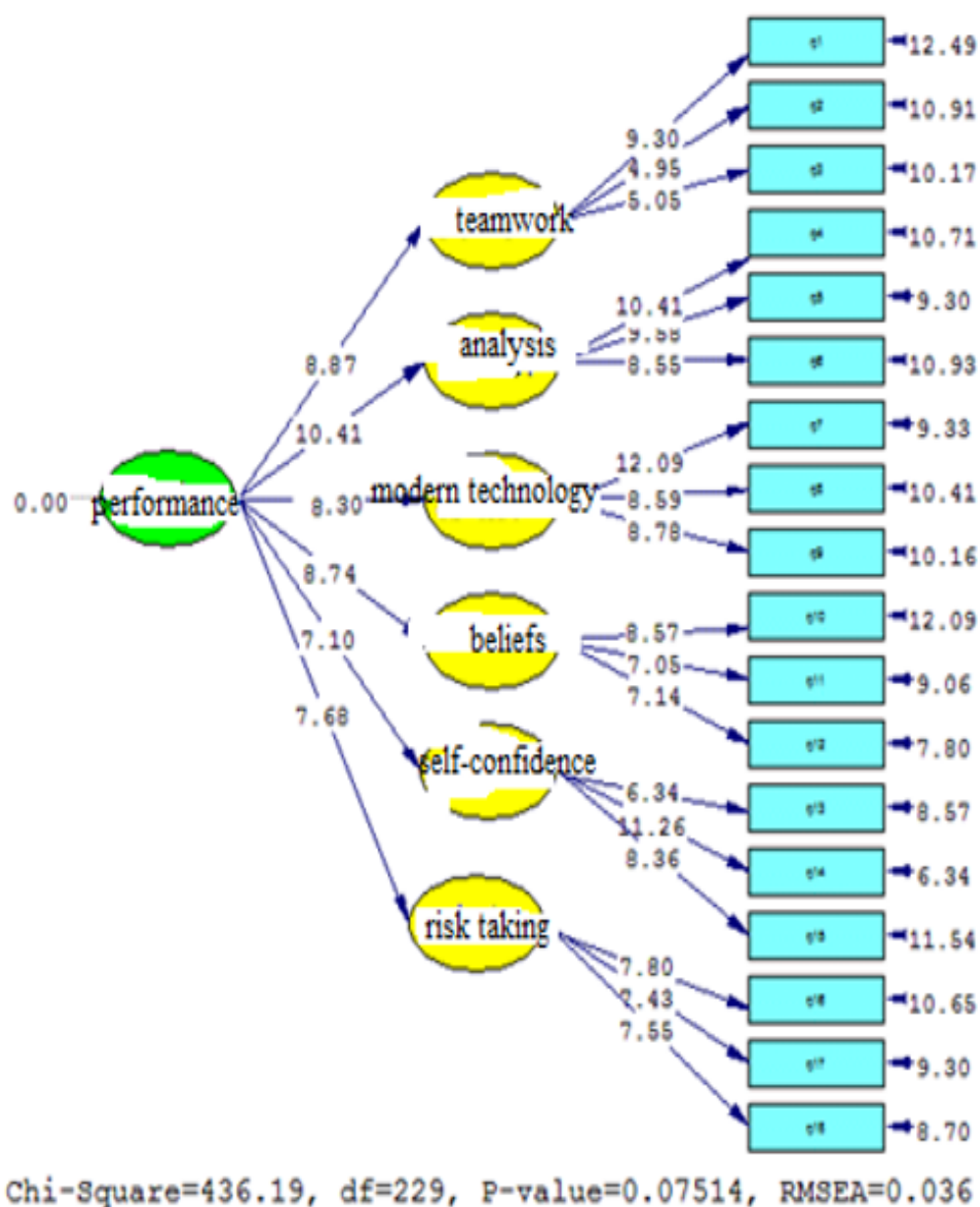


Diagram 4. T-value statistics of the results of confirming the final model of the relationship between performance factors in the Iranian National Tax Administration

Based on the calculations in (Diagram 3) and (Diagram 4), it can be stated that there is a significant relationship between the performance factors in the Iranian National Tax Administration. The LISREL software output also shows the appropriateness of the proposed research model, so that the RMSEA value is 0.036, the value of CMIN / DF is 1.904, and the value of GFI is 0.95.

Secondary Question 2- Is there a significant relationship between behavioral factors in the Iranian National Tax Administration?

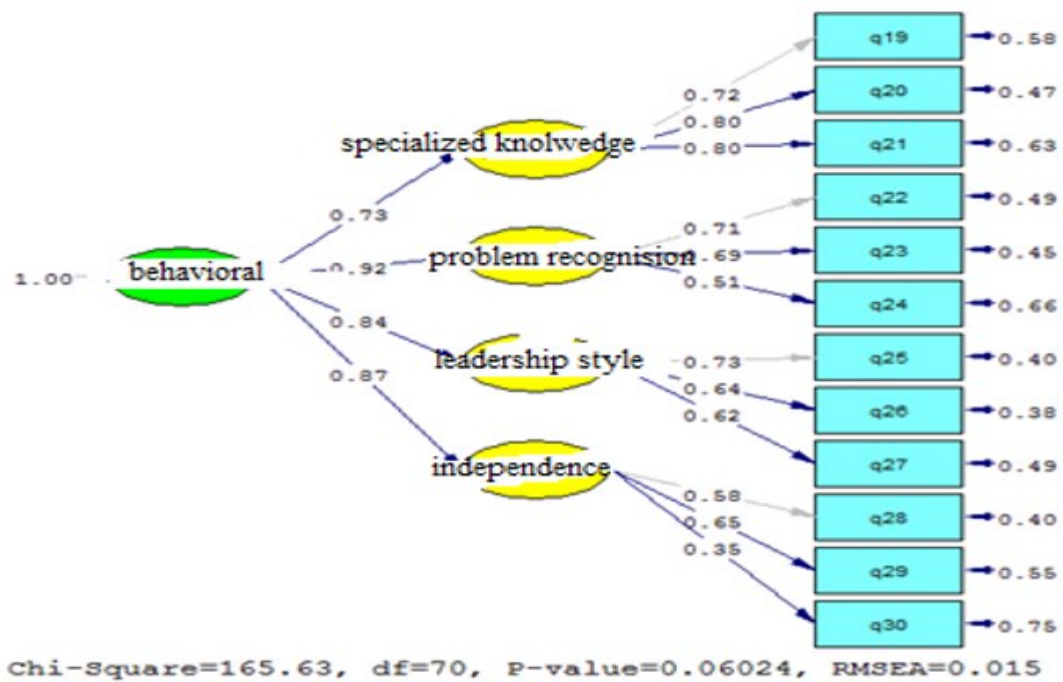


Diagram 5. Results of confirming the final model of the relationship between behavioral factors in the Iranian National Tax Administration

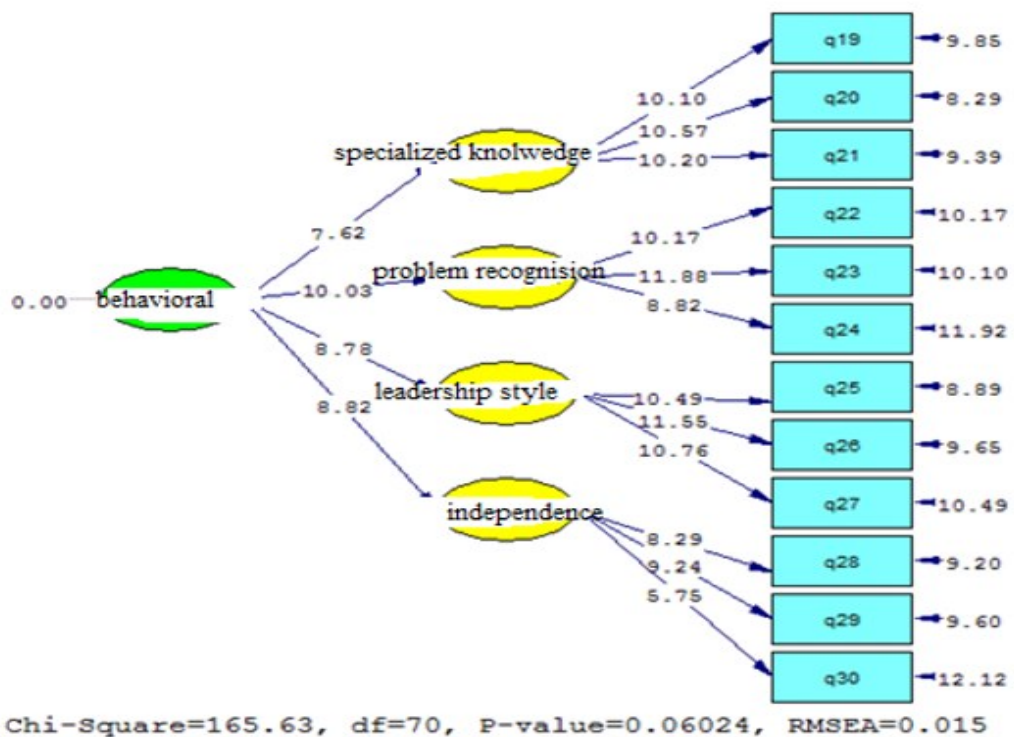


Diagram 6. T-value statistics of the results of confirming the final model of the relationship between behavioral factors in the Iranian National Tax Administration

Based on the calculations in Diagrams 5 and 6, it can be stated that there is a significant relationship between the behavioral factors in the Iranian National Tax Administration. The LISREL software output also shows the appropriateness of the proposed research model, so that the RMSEA value is 0.015, the value of CMIN / DF is 2.366, and the value of GFI is 0.97.

Secondary Question 3- Is there a significant relationship between attitudinal factors in the Iranian National Tax Administration?

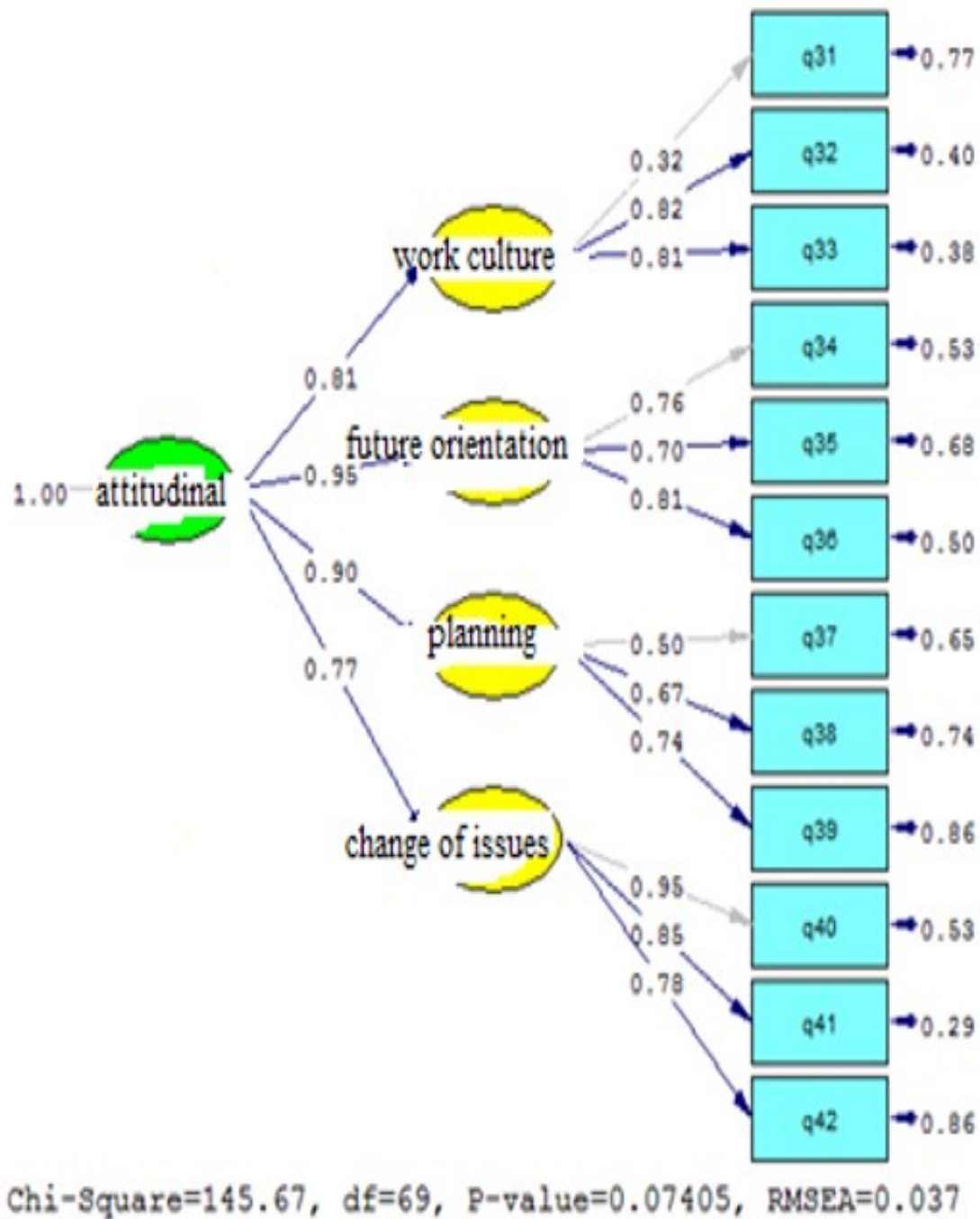


Diagram 7. Results of confirming the final model of the relationship between attitudinal factors in the Iranian National Tax Administration

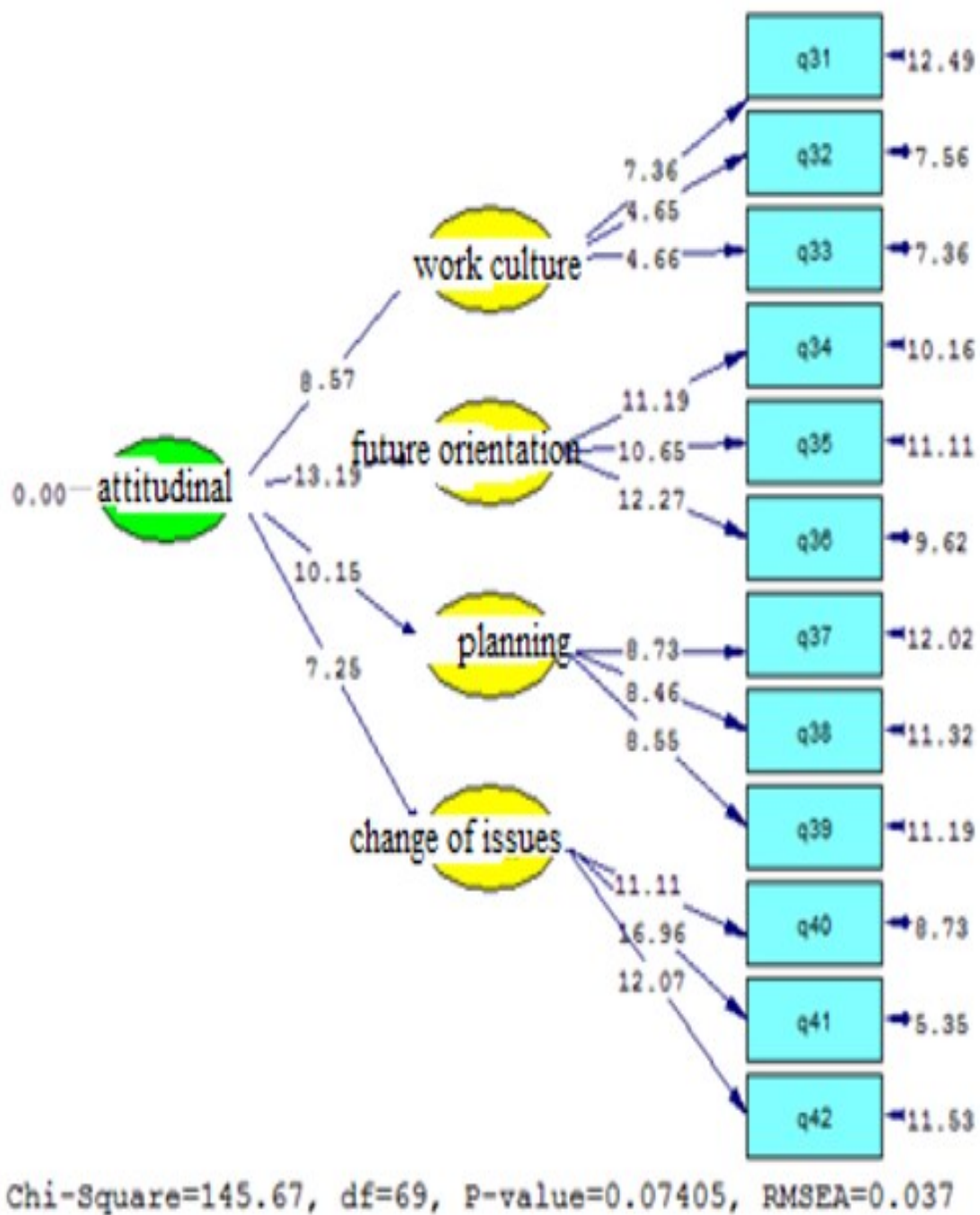


Diagram 8. T-value statistics of the results of confirming the final model of the relationship between attitudinal factors in the Iranian National Tax Administration

Based on the calculations in (Diagram 7) and (Diagram 8), it can be stated that there is a significant relationship between the attitudinal factors in the Iranian National Tax Administration. The LISREL software output also shows the appropriateness of the proposed research model, so that the RMSEA value is 0.037, the value of CMIN / DF is 2.111, and the value of GFI is 0.93.

Secondary Question 4- Is there a significant relationship between attitudinal factors in the Iranian National Tax Administration?

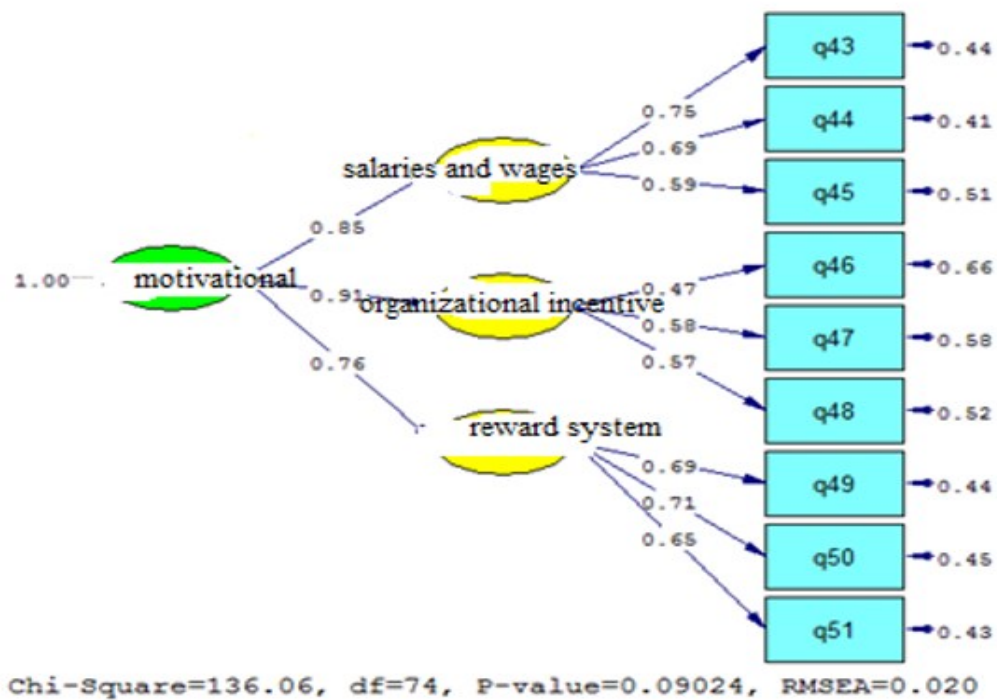


Diagram 9. T-value statistics of the results of confirming the final model of the relationship between motivational factors in the Iranian National Tax Administration

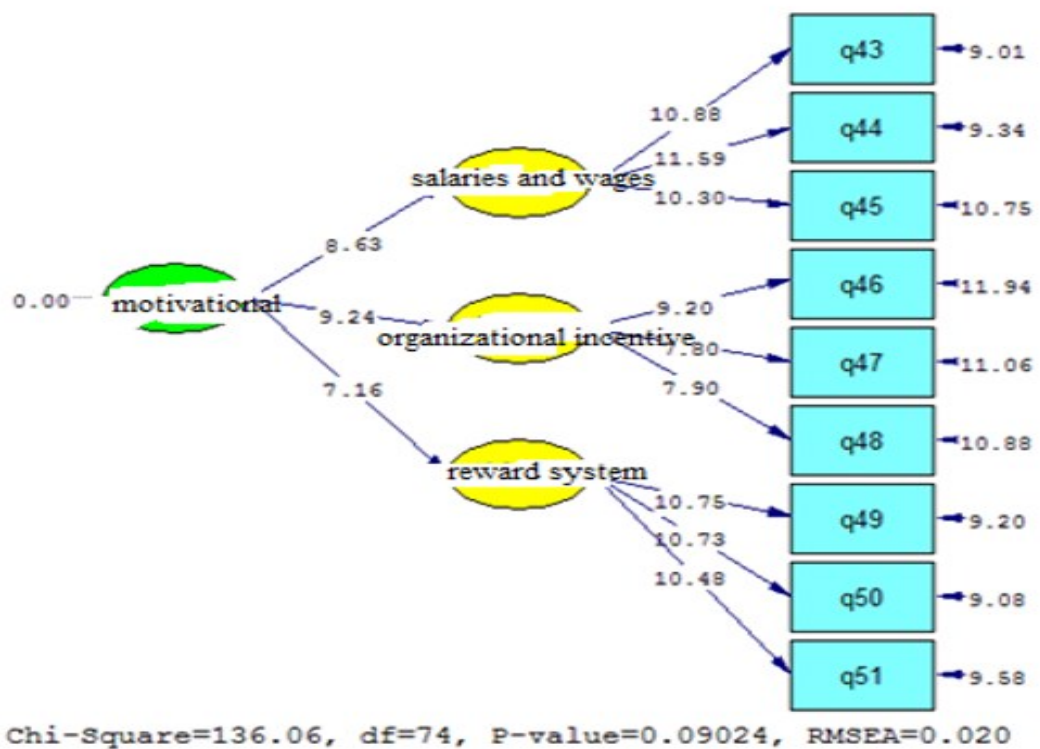


Diagram 10. T-value statistics of the results of confirming the final model of the relationship between attitudinal factors in the Iranian National Tax Administration

Based on the calculations in (Diagram 9) and (Diagram 10), it can be stated that there is a significant relationship between the attitudinal factors in the Iranian National Tax Administration. The LISREL software output also shows the appropriateness of the proposed research model, so that the RMSEA value is 0.020, the value of CMIN / DF is 1.838, and the value of GFI is 0.93.

Secondary Question 5- Is there a significant relationship between structural factors in the Iranian National Tax Administration?

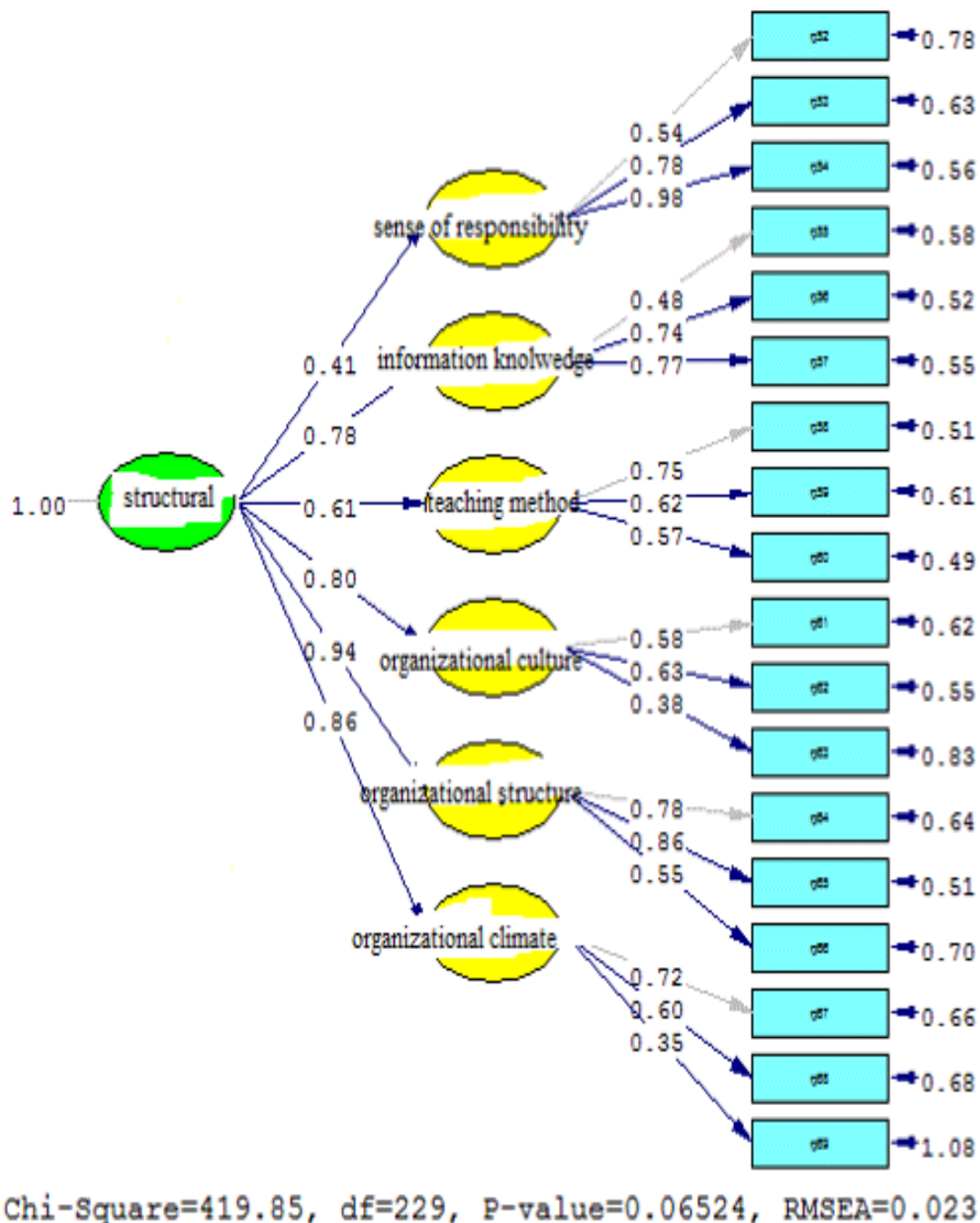
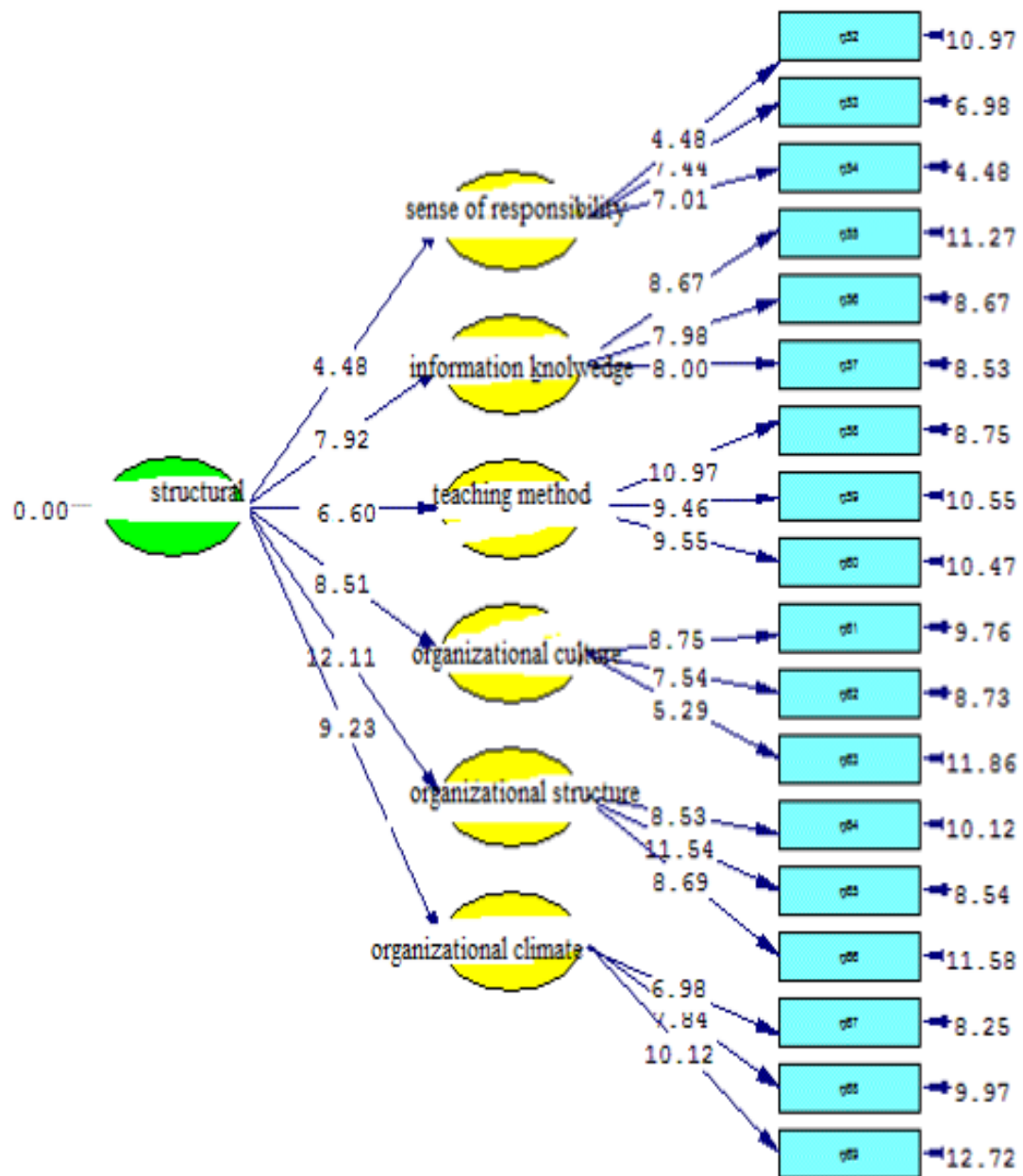


Diagram 11. T-value statistics of the results of confirming the final model of the relationship between structural factors in the Iranian National Tax Administration



Chi-Square=419.85, df=229, P-value=0.06524, RMSEA=0.023

Diagram 12. T-value statistics of the results of confirming the final model of the relationship between structural factors in the Iranian National Tax Administration

Based on the calculations in (Diagram 11) and (Diagram 12), it can be stated that there is a significant relationship between the structural factors in the Iranian National Tax Administration. The LISREL software output also shows the appropriateness of the proposed research model, so that the RMSEA value is 0.023, the value of CMIN / DF is 1.833, and the value of GFI is 0.96.

Secondary Question 6- Is there a significant relationship between structural factors in the Iranian National Tax Administration?

4. DISCUSSION

Based on the results, the power of the relationship between the dimensions and components of knowledge-based decision-making (performance factors, behavioral factors, attitudinal factors, motivational factors, and structural factors) in the Iranian National Tax Administration was at a desirable level. The t-test statistic was also larger than the critical t-value of 1.96 at the 5% error level and showed that the observed correlation was significant. Based on the fitted models, it can be stated that the dimensions and components of knowledge-based decision-making of the Iranian National Tax Administration are related to each other and this relationship is direct. These results are in line with those of the studies conducted by (Barbuto, 2018) and (Brown, 2016). In explaining this result of the present study, it can be stated that the survival of all organizations depends on adopting continuous and varied solutions and strategies. Managers should perform a variety of tasks and functions to guide their organization. In general, decision-making is one of the challenges of managers over time, since they face problems and situations that require decision-making during their organizational mission.

The decisions that are made by managers during their organizational mission affect the performance of their employees and their lives and affect the effectiveness of the organization. Hence, they must be familiar with their field of work and have sufficient experience and knowledge to make their own decision and be responsible at all times for their decisions and have an explanation and justification for any action and decision. Accordingly, it can be stated that managers must have a high level of knowledge in decision-making so that their knowledge-based decisions can bring positive and effective outcomes for the future of the organization.

According to the results, the power of the relationship between performance factors (teamwork, thinking, and analysis, the use of new technologies, beliefs, self-confidence, and risk-taking) showed a desirable correlation. The t-test statistic was also greater than the critical t-value of 1.96 at the 5% error level, indicating that the observed correlation was significant. In other words, there was a significant relationship between performance factors in the Iranian National Tax Administration. These results are in line with those of the studies conducted by (Hassan & Ahmed, 2018) and (Morgeson, 2018). In explaining this result of the present study, it can be stated that paying attention to managers' decision-making process as an important factor in providing and improving organizational performance has high importance.

Investigations and existing evidence in Iran indicate that the organization's performance is lower than expected and desirable level and such a situation is due to a lack of rational and correct decisions in critical situations that may jeopardize this organization's future.

In this regard, the quality of managers' decisions and their knowledge and skills in decision-making, and most importantly, the knowledge-based nature of the decisions are among the key points that should be considered, since knowledge-based decisions of managers directly affect the positive performance of organizations. Accordingly, it can be stated that knowledge-based decisions form the basis for improvement and development of the organization and special attention should be paid to these decisions.

According to the results, the power of the relationship between behavioral factors and (specialized knowledge, problem recognition, leadership style, and independence) showed a desirable correlation. The t-test statistic was also greater than the critical t-value of 1.96 at the 5% error level, indicating that the observed correlation was significant. In other words, there was a significant relationship between behavioral factors in the Iranian National Tax

Administration. These results are in line with those of the studies conducted by (Hau et al, 2013) and (Hosseini & Sadeghi, 2017).

In explaining this result of the present study, it can be stated that organizations need effective and efficient managers and employees to achieve their goals of comprehensive growth and development. A manager as an official representative of an organization to create coordination and increase productivity is at the top of the organization. The success of an organization in achieving its goals depends on the quality of the management actions and effective decision-makers. In the role of managing the organization, the manager can make constructive decisions to guide the workforce. Manager of an organization can make constructive decisions to guide the workforce. If managers' decisions in organizations are based on personal knowledge and ability, they will create a strong sense of motivation in employees and increase their satisfaction with their jobs. Thus, managers can use their knowledge-based decisions to increase their job satisfaction and organizational commitment of employees and productivity of their organization (Johannessen & Olsen, 2011).

According to the results, the power of the relationship between attitudinal factors and (work culture and innovation, future orientation, planning for future challenges, changing organizational issues and decision-making power) showed a good correlation. The t-test statistic was also greater than the critical t-value of 1.96 at the 5% error level (1.96), indicating that the observed correlation was significant. In other words, there was a significant relationship between attitudinal factors in the Iranian National Tax Administration. These results are in line with those of the studies conducted by (Kruger & Johnson, 2017) and (Lachenmaier, 2016) and (Lu & Chen, 2010). Studies have indicated that managers' decision-making style is associated with the efficiency and productivity of organizations. Also, there is a close association between managers' decision-making style and job satisfaction and commitment and motivation.

Hence, decision-making is a specific process involving the selection of a solution from two or more existing decision-making methods. It allows one to select a special behavior and way of thinking and finally selects an option based on the existing conditions.

Thus, decision making cannot be avoided, since to avoid making the decision, in turn, is a form of decision-making. Accordingly, in order that organizations and their management can be successful in coping with organizational challenges that require knowledge-based decisions. It can be stated that knowledge-based decisions form the basis and foundations of the organization and can ensure the survival and continuity of the organization (Poursadegh & Yazdani, 2015).

According to the results, the power relationship between motivational factors and (salary, organizational incentives, reward system) showed a desirable correlation. The t-test statistic was also greater than the critical t-value of 1.96 at the 5% error level, indicating that the observed correlation was significant. In other words, there was a significant relationship between motivational factors in the Iranian National Tax Administration. These results are consistent with those of the research conducted by (Sauk Hau & Kang, 2019) Most of the everyday activities include making trivial decisions and most of them are made conditionally, so they do not allow an individual to assess the reasons for decision-making and predict its subsequent outcomes. However, the quality of management decisions shows its impact on the structure of the organization immediately and if the decisions of managers are knowledge-based, it will have a positive impact on the organization and will ensure the future of the organization, since knowledge-based decisions are made based on results of the past, present, and future of the organization. Hence, the organization's survival can be ensured by relying on these decisions.

5. SUMMARY

Based on the results, the power relationship between structural factors (sense of responsibility and social commitment, information knowledge in the work field, appropriate training methods for making ideas applied, organizational culture, organizational structure, and organizational climate) showed a desirable correlation. The t-test statistic was also greater than the critical t-value of 1.96 at the 5% error level, indicating that the observed correlation was significant. In other words, there was a significant relationship between performance factors in the Iranian National Tax Administration. These results are in line with those of the studies conducted by (Wu & Wang, 2019) and (Brown, 2016). In explaining the results of the present study, it can be stated that decision making is the most important and essential task of any manager at all organizational levels. In fact, the fate of the organizations depends on the status of the managers and the outcome of the decisions, and any action by the manager is a form of decision making. Time and human relationships are considered two major factors in the decision-making process. Past positive and negative experiences play a major role in managers' decision making, so a part of the decision-making process usually relates to past experiences and knowledge. Through knowledge-based decision-making, managers can properly implement organizational laws, programs, and guidelines, and so on in relation to their employees in the organization and thus ensure the effectiveness of the organization. It can be stated that managers' knowledge-based decision-making can be involved in effectively and efficiently use of material and human resources and guide the organization towards improvement and development.

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