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Investigating the components of the dynamic model in increasing tax revenue with a meta-synthesis approach

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Abstract

The issue of increasing tax revenues and possible ways for this increase is an attractive issue for governments. Especially in a single product economy like Iran, whose main source of income is volatile and unpredictable oil income? Today, tax revenues play an important role in financing governments so that tax is considered as a legitimizing factor for a government. After introducing the presented models and classifying them, this research aims to investigate and identify the effective agents in increasing tax revenues and evaluating public trust and participation in the field of tax with a meta- synthesis approach. The main components of this dynamic model include economic, cultural and political agents. Then, in order to better understand the variables affecting this relationship and understand the existing dynamics, a model has been presented for evaluating trust and public participation in the field of tax using the approach of system dynamics modeling and drawing causal-loop diagrams (CLD). Finally, the simulation has been done by Vensim software. Three basic scenarios for increasing the main components and one scenario for simultaneous increase of all the main components were analyzed as levers of the model. The simulation results indicate the positive effect of economic agents on trust and public participation in the field of tax. The point is that the effect of economic agents is greater when all simultaneous components are applied.

Keywords: system dynamics, trust and public participation, tax, scenario
2020 MSC: 62P05, 91B64

1 Introduction

In Iran, due to the lack of transparency and inability of the tax system to correctly identify the amount of income of companies and individuals, the amount of diagnostic tax is generally small. Moreover, a significant part of this diagnostic tax does not reach the stage of collection, and even if it is collected, the principle of benefit is not observed in it; This means that the cost of collection is higher than the tax collected. In addition to being used as a tool to achieve economic goals, taxes are also used as a tool to achieve social goals due to their redistributive role; therefore, neglecting the category of taxes is one of the main agents of blocking Iran's economic and social development.

Examining compliance costs and the optimal level of expenses of the country's tax affairs organization also helps to collect optimal taxes. Research and investigation in this area can bring more efficiency of the tax system by

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better explaining the issue and also by providing recommendations and suggestions. In this research, the investigation and evaluation of public trust and participation in taxation has been done and a suitable dynamic model has been presented. System dynamics is a skillful modeling method to understand systems in the form of computer simulation.

In most countries, the method and principles of taxation have changed from the mandatory method to the optional and self-declared method of tax payment. This change in tax collection methods has increased the focus of tax organizations on the development of tax compliance and culture in order to achieve the goal of tax collection. Improving and developing public participation in voluntary tax payment and increasing compliance are the main programs of tax systems in different countries. By creating suitable conditions, different countries of the world gain the trust of taxpayers, and in this way, by spending less money, they collect a large part of their taxes based on mutual trust and participation of taxpayers. Meanwhile, one of the most important agents affecting the culture of tax payers is their attitude towards payment, which in turn is affected by political, social, cultural, legal, managerial and especially economic agents [7].

In this research, a causal diagram has been used to build a dynamic model after library studies and field data collection. That is, to implement the mental model into a system program, we use these diagrams and by using these diagrams, we turn the mental model into an objective one to achieve goals.

The subject of compliance with tax laws is one of the main concerns for most governments in the world, and for this reason, it has attracted the attention of many researchers. In different countries, to prevent tax evasion, economic disincentives such as tax audits and punishments have been used; but, focusing only on the economic agent has been subjected to various criticisms. For this reason, researchers and tax managers have paid attention to the simultaneous examination of economic and non-economic agents in order to understand the adaptive attitude of taxpayers. Recent research on tax compliance has addressed the importance of examining non-economic agents in tax compliance through approaches such as people's internal values, family values derived from it, culture and religion as non-economic agents; In fact, the role of non-economic agents in tax compliance has been neglected by many researchers and should be given more attention [8].

Efforts to create a progressive and strong tax culture in the country can have an important effect on reducing costs, increasing government revenues and creating effective controls, which results in increasing social justice, public welfare and expanding the tax umbrella and tax compliance. With development of culture tax and consequently the impact on tax compliance (which leads to the identification of taxpayers through self-declaration), taxpayers are more willing to accompany in the field of tax payment and this causes new taxpayers to join in this direction and it leads to the development and expansion of the tax umbrella.

According to the above, in this research, the problem of public trust and participation in the field of taxation has been looked at dynamically, which has led to the presentation of a dynamic model in which the significant effects of the time element. Unlike other studies done so far, it have been used as an efficient tool and has given the ability to test different what-If scenarios, with the aim of determining appropriate policies and strategies for the future; In fact, it has fixed the weaknesses of other models presented in this field.

2 Theoretical foundations

2.1 Political agents

A group of researchers have addressed the issue of fiscal empowerment from the point of view of political economy. The researchers' study in this field shows that the high level of public trust in the government, the legitimacy of the government and the fairness of the tax system can act as positive factors influencing the tax empowerment of taxpayers [15]. Subcategories of this agent include the level of public participation in decision making, the government accountability to the measurements, public awareness from how to consume the incomes, income transparency of government officials and their personal performance to pay the tax, and the legitimacy of ruling system [4].

2.2 Economic agents

Economic theories of fiscal empowerment are often related to deterrence theory. In this section and according to Trivedi and Shehata's opinion, economic theories point out that tax payers show different behaviors according to the audit level. For example, taxpayers calculate the different results of different levels of empowerment (such as evasion costs in case of high detection probability and related effects) and finally choose the option that maximizes their profit after tax deduction. Therefore, economic theories point to the point that taxpayers act as profit maximizers, unethical, and under such conditions, increasing audits and increasing crimes can be proposed as solutions for lack of

empowerment. Studies based on economic theory point out that the behavior of taxpayers is influenced by economic incentives such as profit maximization, the possibility of detection by officials, the income of taxpayers in the informal economy and other economic agents [17].

Subcategories of this agent include government policies, combination of government income, inflation, interest rates and international effects [4].

2.3 Cultural agents

Culture is a critical variable to explain how social interactions occur. Culture is defined as a shared value in a society. Investigating culture in studies has shown that national culture has an impact on people's perception. Society members are identified with their national culture at different levels. Individual values are formed by aspects of national culture, including religion, language, ethnicity, geographic region, and different social, organizational, and professional groups [18]. In the last few decades, special attention has been paid to the tax culture. The reason for the increased attention to tax culture in recent years can be attributed to the existence of inadequacy in the tax system of the countries. These inadequacies can be classified into three groups: cultural problems, tax law problems, and implementation problems [11]. The specific tax culture of a country can be considered as all formal and informal institutions related to the tax system and its operation, including dependencies and relationships created by continuous interactions, which are formed by groups and agents such as tax managers, payers, policy makers, supervisors and academicians [10].

3 Literature review

Today, many studies have been done in the field of taxation [9, 13]. The results of Sadegh's research [14], entitled "investigating the implementation effects of the value added tax law in increasing or reducing the tax evasion of natural and legal persons" show that the self-control of the value added tax system and the promotion of the tax culture of high-level taxpayers. They have the first in the value added tax system in reducing tax evasion. In her study entitled "Identifying and prioritizing factors affecting the increase of electronic tax payment using the multi-criteria decision making (MCDM) approach", Rahmani [12] showed that the performance quality of the payment system is the most important factor affecting electronic payment increase, and the knowledge of taxpayers has a great influence on their inclination towards electronic payment; Therefore, raising awareness about the payment system and facilitating, backing up and compatibility of electronic payment system software can cause a further increase in electronic tax payments.

After briefly introducing the models presented for evaluating electronic readiness and classifying them, Farokhizadeh et al. [3] have investigated and identified effective factors in evaluating the readiness of small and medium industries to enter the electronic commerce market with a meta-synthesis approach. Then, in order to better understand the variables affecting this relationship and understand the existing dynamics, a model is presented for evaluating the readiness of small and medium industries to enter the e-commerce market using the approach of modeling system dynamics and drawing causal-cyclic diagrams, and finally simulation have done by Vensim software. Two basic scenarios of advertising increase and system quality have been investigated and analyzed as levers of the model. The simulation results indicate the positive effect of system quality and advertising on the electronic readiness of industries, with the difference that the effect of system quality is greater than advertising on increasing electronic readiness.

In their study on economic and non-economic elements affecting tax compliance of taxpayers, Azizi et al. [1] showed that although different approaches such as coercion and trust or punishment and encouragement are proposed in dealing with tax compliance, tax compliance is almost a self-declaration based on trust in taxpayers. Reforming the tax structure and adopting optimal tax policies requires knowledge of taxpayers and economic and non-economic factors affecting their compliance behavior. Having benefits such as increasing the level of general welfare of the society, the tax culture plays a significant role in the macroeconomic level of any country.

In the study on factors affecting tax culture from the point of view of taxpayers and tax experts of the general department on value added tax in Tehran, Masihi et al. [7] showed that culture is one of the obstacles to the realization of income tax. According to the results of the present research, the feeling of a positive attitude towards the job and suitability of the work environment of tax agents, executive guarantee and honoring the authority and maintaining and protecting the dignity of the agents are among the factors influencing the tax culture.

The results of the research of Izad Bakhsh et al. [5] show that the promotion of tax culture and tax laws and regulations as the most effective factors and public opinions and expectations of taxpayers from the results of paying taxes are among the other effective factors in attracting public trust and participation to pay taxes.

In the study on the factors influencing the compliance culture of tax payers in Golestan tax administrations, Jafari et al. [6] showed that the variables of tax incentives and facilities, tax penalties, expertise and efficiency of tax officials, tax culture and participation of taxpayers and their justification of the way of tax calculation are effective in improving the compliance of taxpayers.

4 Research methodology

4.1 Research questions

1. What are the evaluation models of trust and public participation?
2. What are the main and effective variables on trust and public participation?
3. What is the dynamic model for evaluating trust and public participation in the field of taxation?
4. What is the final scenario for improving the indicators?

4.2 Research hypothesis

According to the goals, research questions and the type of research that is system dynamics, the hypotheses that are considered for it will be dynamically mental model and include:

- The generated CLD model will be proposed as a dynamic hypothesis.

4.3 Collecting date method

In this research, the method of collecting date is through library and field studies, and the tool for collecting information in this research is data and information collected using organizational documents, books and models presented previously. To identify the effective factors on the assessment of public trust and participation in the field of taxation, first the various models presented in the assessment of public trust and participation in the field of taxation are reviewed by referring to the subject literature, while identifying the dimensions, components and indicators presented in the reviewed models, meta-synthesis method was used in order to compare, interpret, translate and combine them. Also, after analyzing and integrating the findings of previous researches, in order to better understand the influencing variables and understand the existing dynamics, an appropriate framework was presented using the system dynamics modeling approach and drawing circular causal diagrams.

4.4 Analyzing method

By simulating the evaluation model of trust and public participation in the field of taxation, various scenarios related to strategic goals have been tested and the efficiency of the model has been increased. For this purpose, after stating the problem, creating a dynamic hypothesis and determining the indicators, collecting data corresponding to each of the criteria, and finally, the relationship of the indicators related to each perspective of the identified model is shown by causal loops diagram using Vensim software. The cause-effect diagram and stock flow diagram have been drawn and the necessary analyses have been made. A causal loop diagram is a scientific diagram that helps visualize how different variables are related in a system.

4.5 Scope of the research

4.5.1 Topic scope of the research

This research is in the field of taxation and has provided a dynamic model to help managers, planners and decision makers in the tax affairs organization in order to increase trust and public participation in the field of taxation.

4.5.2 The spatial scope of the research

In this research, the administrations of the city of Tehran in Tehran province have been examined.

4.5.3 The temporal scope of the research

This research was conducted from February 2016 to June 2019.

5 Research steps

5.1 Studying the current status

At first, by studying the performance of the tax affairs organization, which is in charge of determining and collecting taxes in the country, and the researches and activities carried out in this field, a detailed assessment of the importance of trust and public participation in the tax field was made.

5.2 Gathering information, determining and defining main variables

In the second step of conducting the research, a detailed study of past researches was done using meta-synthesis method and model criteria method. After identifying the papers and books using the key words of trust and public participation, the evaluation models of public trust and participation in the field of taxation were discussed in Elsevier databases and scientific databases, and 550 papers and 200 books were revealed.

After reviewing the titles of the displayed books and papers, and according to the subject, questions and purpose of the research, 80 papers and books were selected for study and review. In the next stage, abstracts of selected papers and books were studied and among them 33 papers and books suitable for research were selected for information extraction.

5.3 Determining the tools required for research

In this step, considering the possible complications in systems, which include:

1. A large number of constituents and agents
2. The complexity caused by the dynamic interaction and mutual interaction between the components of the system. The researcher made decision to solve this complexity by using the dynamic simulation method.

5.4 Determining cause and effect relationships

In this step, by using the outputs of the third stage and by using auxiliary variables, as well as taking help from subject experts, supervisors and consultants, the cause and effect relationships have been determined as shown in Fig. 1.

5.5 Drawing stock- flow diagrams

At this stage, with the help of professors and using Vensim software, which is dynamic simulation software, the stock- flow diagram has been drawn as shown in Fig 2.

5.6 Formation of dynamic model equations

According to Forrester's theory, the following methods have been used among different methods for finding equations in a dynamic system problem:

1. Using existing physical laws and theories between agents
2. Using statistical information among model agents
3. Using the opinion of experts
4. Using the general opinion governing the subject
5. Using the modeler's point of view

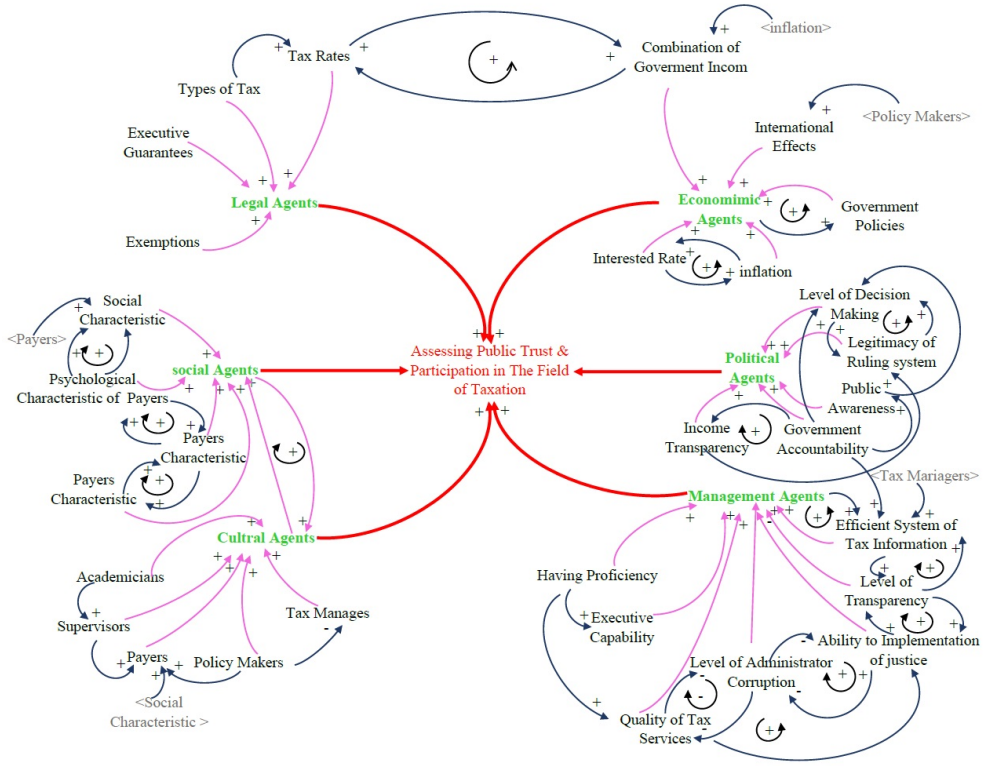
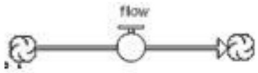


Figure 1: Determining cause and effect relationships

The research model was developed based on the system dynamics methodology. System dynamic methodology is based on modern control theory in which system behavior is simulated by differential and integral equations. The term system is used in several fields of science, but in dynamic system modeling, the concept of system is very specific. The concept of system in the method is a set of components which are connected to each other through four elements including:

Stocks or reservoirs with symbols 

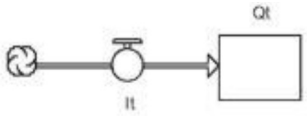
Flows or processes with symbols 

Converters or system constants with symbols 

Connectors with symbols 

And represent the nature of the real system in the computer space [2].

In this way, with the help of different combinations of these system structures, the relationship between the variables affecting the trust and public participation is formulated, but the main foundation of the dynamic modeling of the systems is based on quantitative differential equations, and the symbols mentioned in the above are only tools to simplify the formulation of mathematical models.



For example, in the above schematic relationship, which is the simplest type of relationship in the system dynamic

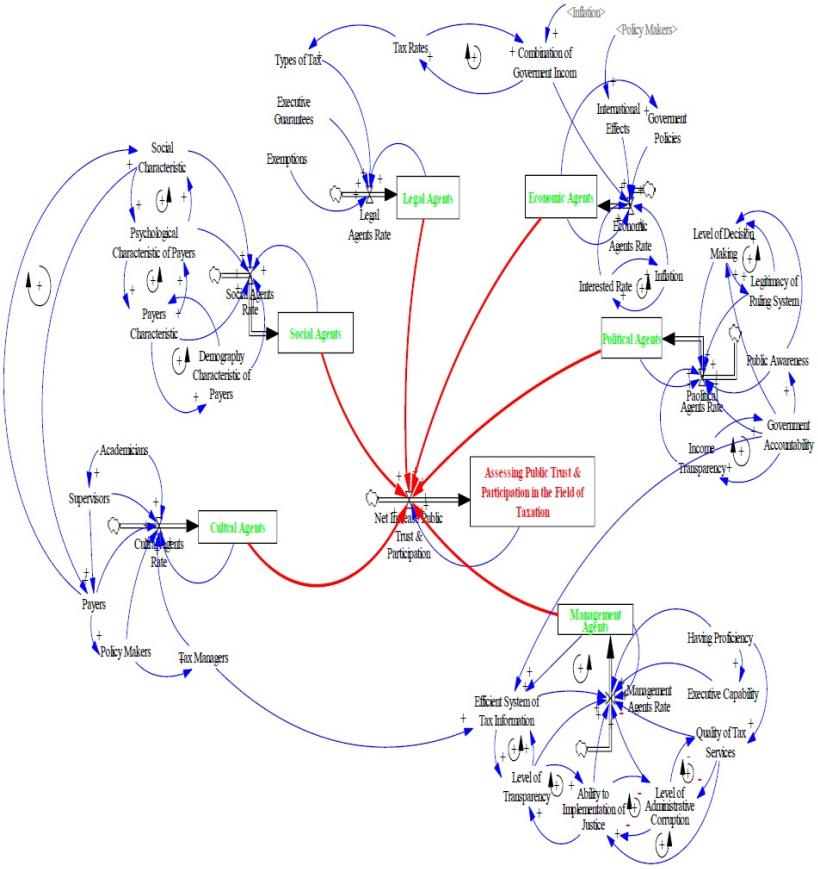


Figure 2: Stock-flow diagram

modeling space, the way to calculate $Q(t)$ values is as follows:

$$Q(t) = Q(0) + \int_0^t i(t)dx \tag{5.1}$$

Euler or multi-point integration method is used to calculate the above integral in dynamic analysis. Of course, Euler's integral method is more practical due to the greater flexibility it creates in the use of mathematical and conditional functions, and the integration technique of the present research is also based on this method. Euler's integration method is as follows:

$$\int_t^{t+DT} I(x)dx = DT.1(t) + \frac{DT^2}{2}I'(\mu) \qquad t \le \mu \le t + DT \tag{5.2}$$

Since the function $I(t+DT)$ is usually unknown and is not available to calculate $\int_t^{t+DT} I(x)dx$, this type of integral is designed to solve numerical differential equations. In the above expression, DT is the time step of performing the calculations and μ is the time value between the time intervals.

Conceptual model of the research is presented in Fig. 3. Also, the effective indicators in the "model" of trust and public participation in taxation are provided in Table 1. The research algorithm is shown in Fig. 4.

6 Validation of the model

Generally, validation in the dynamic system model is based on two assumptions:

1. Dynamic system models are designed for a purpose.

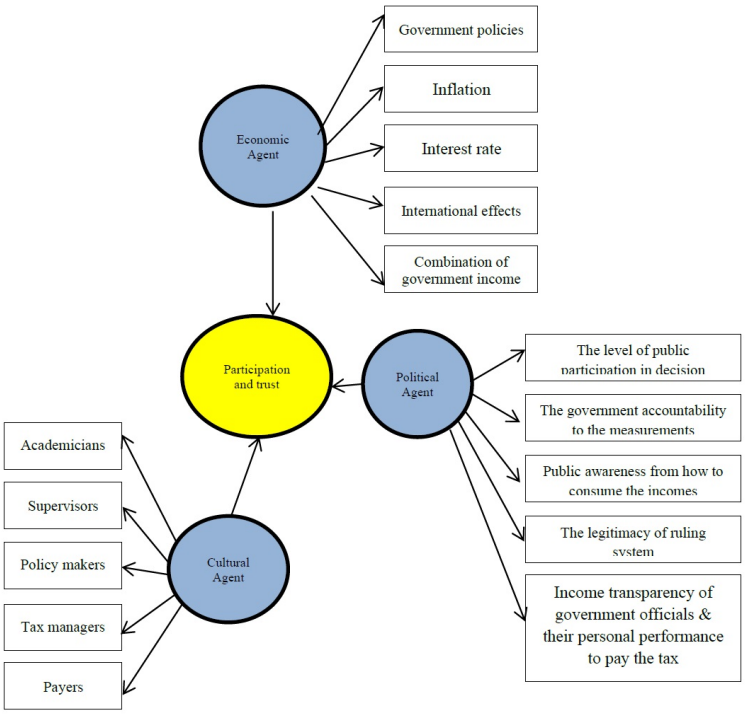


Figure 3: Conceptual model of the research

Table 1: Effective indicators in the "model" of trust and public participation in taxation

Cultural factors	**Economic factors**	**Political factors**
Academicians	Government policies	The level of public participation in decision making
Policy makers	Combination of government income	Government accountability to the measurements
Supervisors	Inflation	Income transparency of government officials and their personal performance to pay the tax
Tax managers	Interest rate	Public awareness from how to consume the incomes
Tax payers	International effects	Legitimacy of the ruling system

2. The structural validity of the model has priority over its behavioral validity and it can be checked only when the structure of the model is valid.

1. Boundary adequacy test: have the important concepts and structures that show the policy been seen for the model? This test is a subjective test and depends on the assumptions of the model. Are all the important concepts related to the problem seen in the model? Does the behavior of the model change significantly if the assumptions related to the model boundary are changed? Will the policy suggestions change if the model boundary is developed? The first step in this test is determining the range. One of the methods is to use the model range chart, which summarizes the model range by listing excluded, endogenous and exogenous variables. The variables included stock, flow, auxiliary and constant variables. According to test, stock and flow variables are excluded variables. The auxiliary variables are considered as endogenous variables and constant variables are exogenous variables. For this chart test, the range of the model and the generated causal diagrams were given to the experts and they approved them after modifying the defects and presenting their suggestions.
2. Structure assessment test: Does the model structure include the descriptive knowledge of the modeled system or not? Has the level of integration been appropriate? Is the model consistent with the basic concepts of physical laws such as the law of survival? Do the decision-making rules support the behavior of the actors in the system? In order to check the compatibility of the model with the descriptive knowledge, causal and stock - flow diagrams were used. By testing equations and surveying experts, it was determined that descriptive knowledge has been implemented. Testing the level of integration relies more on qualitative judgments. The structure of the model was compared with its causal relationships and with the topic literature, which was largely taken from papers. The model and steps of doing the work were reviewed by several experts and approved by them. Of course, there were different views and tastes about how to design it, but they all agreed on the good relationship between the

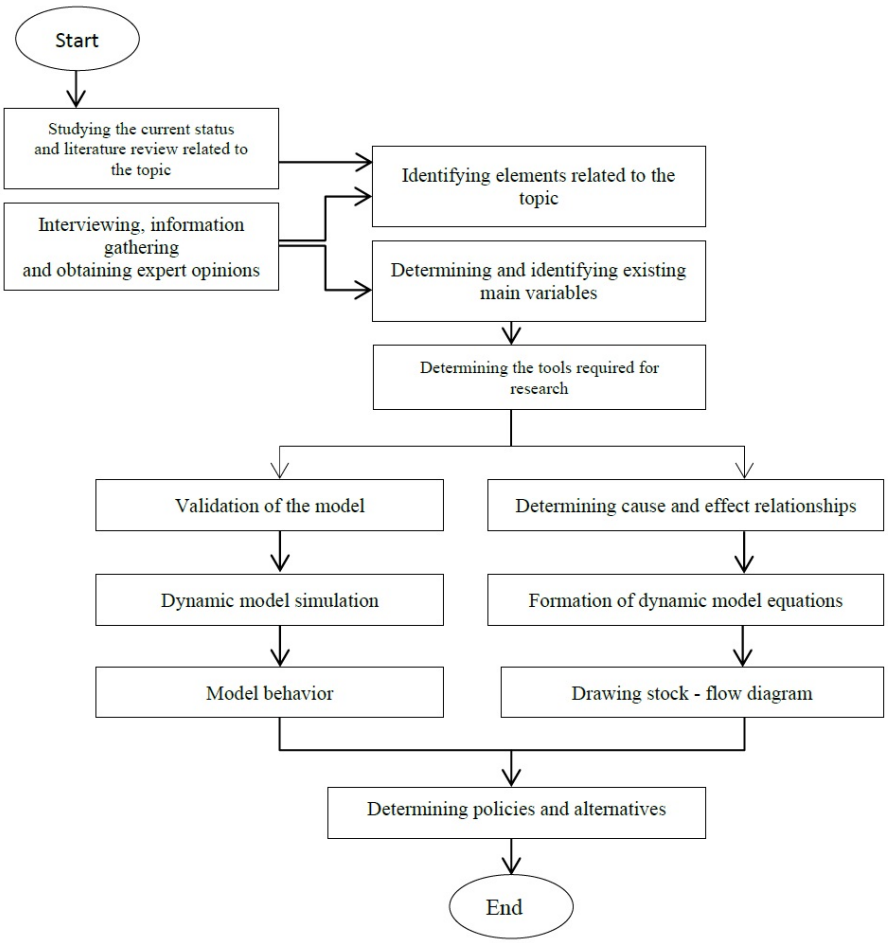


Figure 4: Research algorithm

variables. Some comments could not be applied due to limited resources. In this study, Vensim software was used for simulation. This software has the capability of partial tests, and at each stage of the simulation, the logic of the simulation decisions was tested.

3. Dimensional consistency test: Are the model equations dimensionally compatible in the real world without using parameters or not? Software like vensim have pre-defined units inside them (they also have the ability to define new units for them) that check the equations in terms of unit consistency. This means that both sides of the equation must have the same units. This model was implemented in vensim software and dimensionally checked.
4. Parameter assessment test: Are the model parameters compatible with the relevant description and numerical knowledge of the system? Are the amounts and values of the parameters compatible with the actual data and figures of the system? Do all the parameters have similar examples in the real world? In fact, in such tests, the obtained information is compared with the reference model. The parameters of the model are tested against the available data from the past. For this purpose, the opinion of experts, modeler's knowledge and other studies were used.
5. Limit states test: In this test, the behavior of the main variables of the model in limit states (very high and very low values) is examined and the sensitivity of the model to these changes is studied. For this purpose, limit values were checked in each equation. Here, the test answer to the final limit of the inputs regarding trust and public participation in the field of taxation, cultural, political, and economic agents have been presented in Figs. 5 to 8, respectively.

7 Run of the model

After ensuring the validity of the model, the model is run. The initial conditions of the model, the run time, and the number of runs are explained in the next sections.

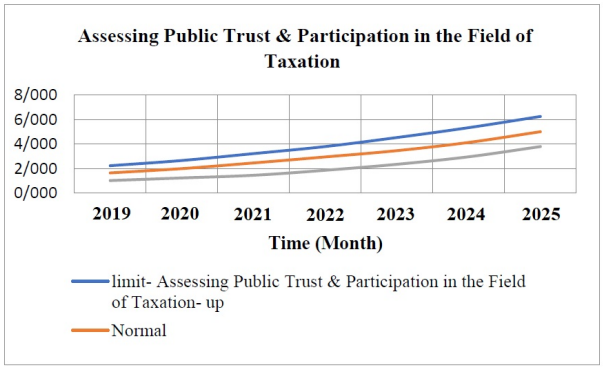


Figure 5: The level of public trust and participation in the field of taxation in the conditions of minimum inputs (green line) and maximum inputs (blue line)

Figure 6: Amount of cultural agents in conditions of minimum inputs (green line) and maximum inputs (blue line)

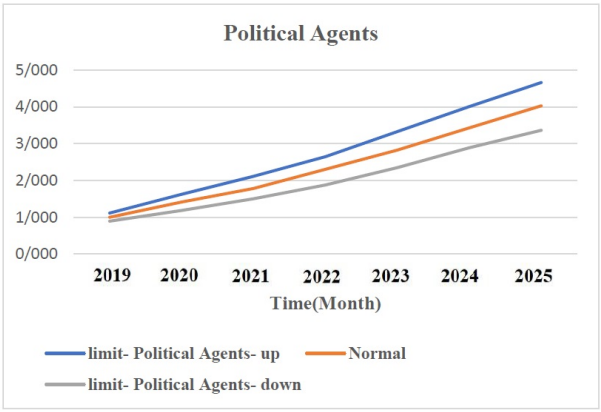


Figure 7: The amount of political agents in the conditions of minimum inputs (green line) and maximum inputs (blue line)

7.1 Run time

The model has been run in a period of 84 months, equivalent to 7 years (2019-2025).

7.2 Number of runs

Due to the fact that none of the following variables are random or in other words statistical distribution functions were not used in the formation of the equations, the results of different runs of the model with the same input group are the same.

The result of model test in Vansim software is shown in Fig. 9.

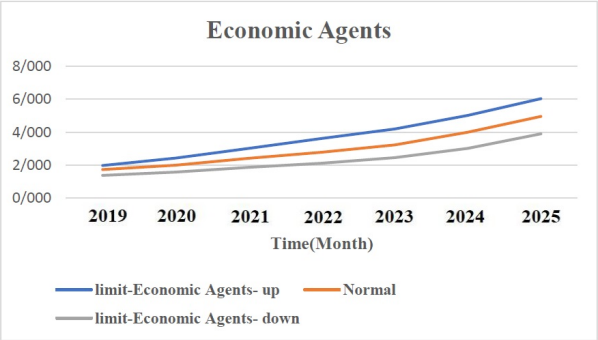


Figure 8: The amount of economic agents in the conditions of minimum inputs (green line) and maximum inputs (blue line)

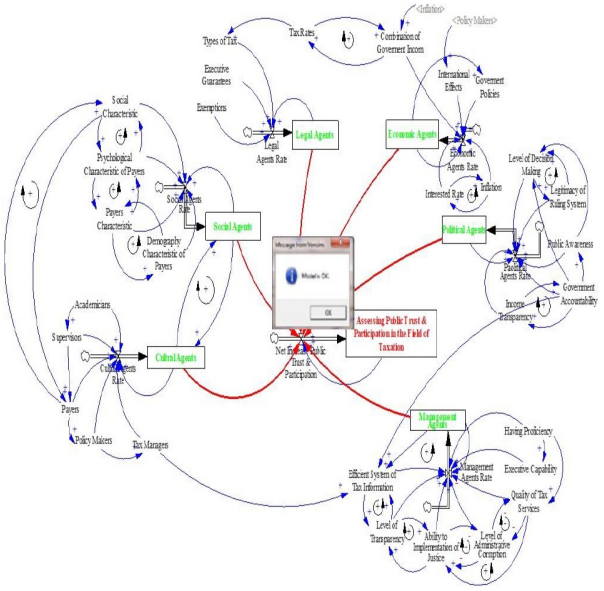


Figure 9: Model test in Vansim software

8 Policy analysis

Simulation is the process of designing a model of the real system and conducting experiments with this model with the aim of understanding the system's behavior or evaluating various strategies for the system's operation. In this definition, simulation includes modeling and using the model [16]. There are some of the assumptions considered in the simulation of public trust and participation in taxation:

1. The simulation period is 84 months
2. The time step and Saveper in this model is considered equal to 0.115 (the subject of integrating the model equations).
3. The type of integration in this simulation is Euler integration and the time for simulation is considered monthly.
4. All statistics and information used in this simulation are taken from reliable sources and authorities.
5. In this simulation, for the simplicity of the model, all the functions are considered as simple as possible and the functions like log-arc sin-tan and so on have been avoided.

In the simulation of dynamic patterns, it is possible to change the variables and parameters under the control of planners and policymakers by considering different scenarios and observe the results. This practice will help to better understand the behavior of the system and the decision making of policy makers in the real world. The simulation of the variables in the dynamic system starts with the base simulation. Basic simulation is a situation where no changes are made in the conditions of the model variables. In fact, the basic simulation represents the basic behavior of the model variables using the initial values given to it. On the other hand, in the simulation with different scenarios, the behavior of the model variables is investigated when the conditions change.

The following diagrams (Figs. 10 to 15) show the state of model run in the state where the data and equations are completed:

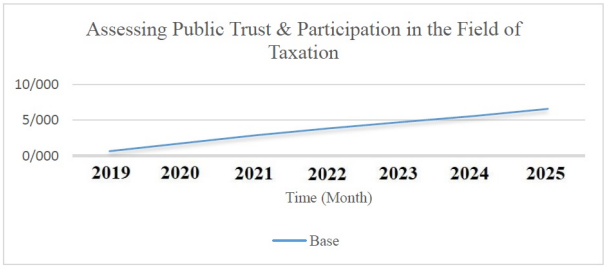


Figure 10: Simulation results of the base model

8.1 First scenario: increasing cultural agents

If the coefficient of cultural agents, which is calculated based on the opinion of experts, is increased from 3 to 5, as can be seen in Fig. 11, the level of public trust and participation in the tax field will increase from 0.66 units in the base year to 7.96 units in the final year of the simulation applying this scenario.

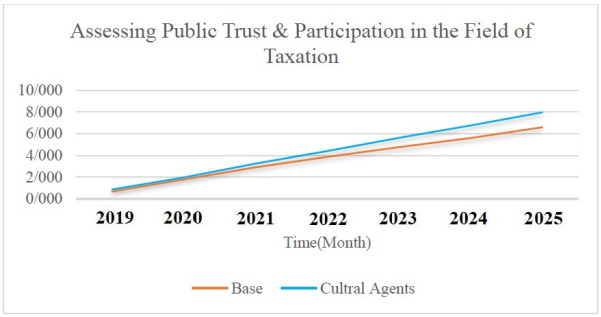


Figure 11: The results of the variable simulation of the level of trust and public participation in the tax field in the first scenario

8.2 The second scenario: increasing political agents

If the coefficient of political agents, which is calculated based on the opinion of experts, is increased from 3 to 5, as can be seen in Fig. 12, the level of public trust and participation in the tax field will increase from 0.66 units in the base year to 6.8 units in the final year of the simulation applying this scenario.

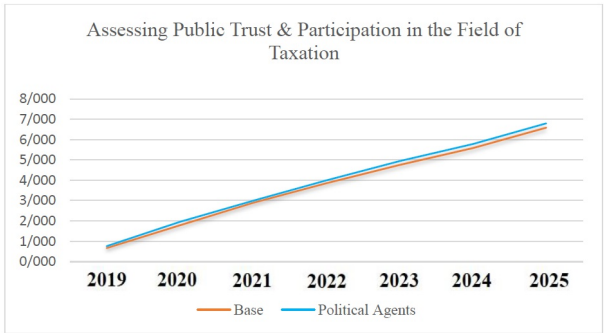


Figure 12: The simulation results of trust and public participation in the field of taxation variable in the second scenario

8.3 The third scenario: increase in economic agents

In this scenario, it is assumed that the coefficients of the variables of economic agents such as government policies, government income composition, interest rate, inflation and international effects will increase. In this case, the amount of trust and public participation in the tax field based on the theoretical foundations of the model will increase and compared to the base state and has an upward trend so that in the final year of the simulation, the level of public trust and participation in the tax field shows a 23% increase compared to the base status by applying this scenario as shown in Fig. 13.

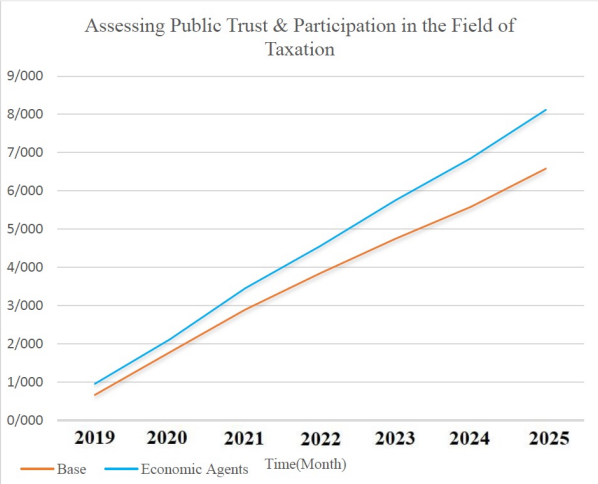


Figure 13: The simulation results of trust and public participation in the field of taxation variable in the third scenario

8.4 Comparison of scenarios (drafts)

In Fig. 14, the scenarios (increase in economic, cultural and political factors) are compared to the base situation within a graph.

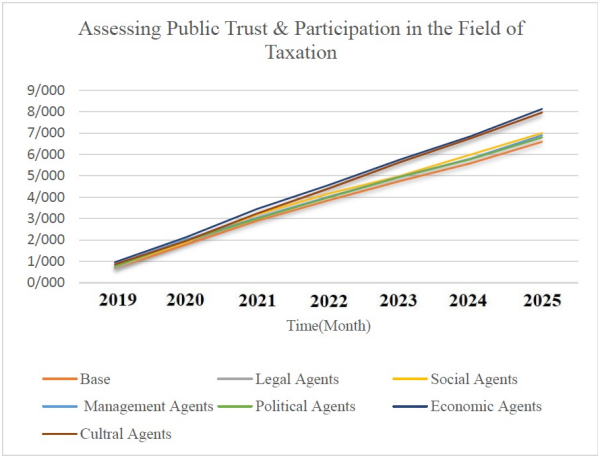


Figure 14: Comparison of scenarios compared to the base case

8.5 Seventh scenario - applying all scenarios at the same time

If all the scenarios mentioned above, i.e. the increase of political, economic and cultural factors, are applied at the same time, as can be seen from Fig. 15, the level of trust and public participation in the tax field will reach 7.23 in the final year of the simulation, which shows an increase of 0.65 points compared to the base situation by applying this scenario.

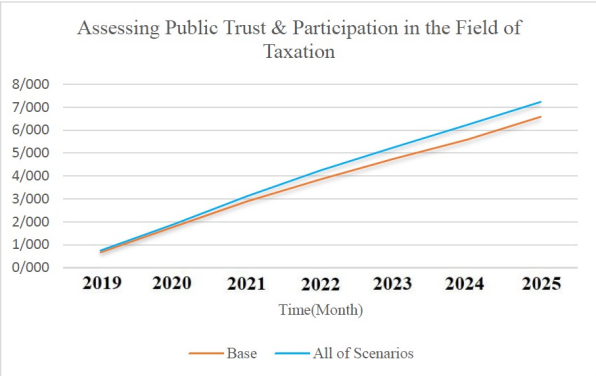


Figure 15: The simulation results of trust and public participation in the field of taxation variable in the seventh scenario

9 Discussion and conclusion

After validating the output of the model by experts and finally by Vensim software, the following results were obtained:

Considering the three upcoming scenarios, the third scenario is the increase of economic agents; we will have a higher growth in trust and public participation in the tax field in 2026. In the next stage, the application of the first scenario and the second scenario, which means the increase of cultural and economic agents, will have a greater effect on increasing public trust and participation in the tax field.

Finally, the application of the fourth scenario means the application of all factors, and then the second scenarios of improving social agents, and then the implementation of the second and third scenarios, respectively, i.e. the improvement of political and economic agents, are ranked first and second in importance. Ranking of scenarios modeled in Vensim software is presented in Table 2.

Table 2: Ranking of scenarios modeled in Vensim software

Status	**The topic of the scenario**	**The status in 2019**	**Continuation of the status in 2026 (soft conditions)**	**If the scenario is implemented in 2025**	**The priority of doing the scenario**
Implementation of the fourth scenario	Political factors	0.66	6.586	6.8	7
Implementation of the fifth scenario	Economic factors	0.66	6.586	8.1	1
Implementation of the sixth scenario	cultural factors	0.66	6.586	7.96	3
Implementation of the seventh scenario	At the same time scenario 1 to 3	0.66	6.586	7.23	4

10 Suggestions

Using the results obtained from the model and the output of Vensim software, considering the cultural and environmental characteristics of the country and the Tax Administration, it is suggested that the improvement of economic and cultural agents, which are among the most important solutions for improving trust and public participation, should be put on the agenda. Based on the results of simulation and examination of different policies and scenarios, we come to the conclusion that the first step to improve economic agents, cultural agents and their sub-components should be planned in the tax affairs organization to increase public trust and participation in the field of taxation. The improvement of political factors is in the next stage.

Therefore, it is suggested that the Tax Administration, along with the development of tax bases, human resources and the collection of comprehensive tax information, should also pay attention to agents that improve public trust and participation in the field of taxation and make it one of the important aspects of comprehensive management in its organization.

10.1 Suggestions for future research

- For future researches, it is suggested that in the field investigations of the effect of participation and public trust, sampling should be done from all government economic organizations such as customs; because studies have shown that this effect is different from each other in all sectors.
- It is also suggested that in determining the performance of any source that is used to collect data, the statistics of the organizations themselves should be used in order to gain more confidence in the research results.
- It is suggested that other variables that have an effect on public trust and participation in the tax field should be investigated in the field and extracted and modeled using the meta-synthesis method.
- It is suggested to study and model the models of neighboring countries and successful countries in the field of gaining trust and public participation in the field of taxation.

References

[1] A. Azizi Mehr, A. Veisi and F. Kasbi, *Investigating the economic and non-economic factors affecting taxpayers tax compliance*, Second Ann. Conf. Econ. Manag. Account., Ahvaz, Shahid Chamran University, Khuzestan Industry, Mining and Trade Organization, 2017.

[2] M. Dayton and J.J. Weinberk, *Dynamic modeling of environmental systems*, Springer Science & Business Media, 1999.

[3] F. Farokhizadeh, A. Toloui Ashlaghi, R. Radfar and N. Shoja, *Measuring the readiness of small and medium production companies to enter e-commerce*, Ind. Manag. Quart. **14** (2019), no. 47, 90–102.

[4] M.H. Imani Khoshkho and T. Amirmostofian, *Promotion of tax culture and its effect on expanding the tax umbrella and identifying new taxpayers*, Negah Danesh Pub., Tehran, 2017.

[5] M. Izad Bakhsh, P. Ghiyashi, M. Sohrabi and M. Eslami, *Investigating effective factors in public trust and participation in paying taxes*, 7th Nat. Conf. Manag. Econ. Account., 2016.

[6] S. Jafari, P. Saidi and A. Barzegar Khandoozi, *Effective factors on the compliance culture of taxpayers of Golestan tax administrations*, Int. Conf. New Direct. Manag. Econ. Account., Tabriz, East Azerbaijan Representative Industrial Management Organization, 2015.

[7] M. Masihi, A. Mohammad Nejad Aali Zamini, *Investigating the effective factors on tax culture from the point of view of taxpayers and tax experts of the general department of value added tax of Tehran*, Cultural Manag. **9** (2015), no. 1(consecutive 27), 29–45.

[8] R. Mohdali and J. Pope, *The influence of religiosity on taxpayers' compliance attitudes*, Account. Res. J. **27** (2014), no. 1, 71–91.

[9] M. Nedaei and G. Ramzgooyan, *Effectiveness of spiritual leadership and organizational justice on the commitment and administrative integrity in Iranian national tax administration*, Trans. Data Anal. Soc. Sci. **3** (2021), no. 1, 1–13.

[10] B. Nerre, *The concept of tax culture*, Proc. Ann. Conf. Tax. Minutes Ann. Meet. Nat. Tax Assoc. **94** (2001), 288–295.

[11] V. Radaev, *Informal institutional arrangement and tax evasion in the Russian economy*, Economic Sociology State University, Moscow, 2001.

[12] Z. Rahmani, *Identifying and prioritizing factors affecting the increase of electronic tax payment using the multi-criteria decision-making approach (MCDM)*, Master's thesis, Rajah Institute of Higher Education, Faculty of Human Sciences, 2021.

[13] A.A. Rastegar and Z. Sharei, *The relationship between reward management system and employee performance and motivation*, Trans. Data Anal. Soc. Sci. **2** (2020), no. 1, 36–44.

[14] F. Sadegh, *Examining the executive effects of value added tax law in increasing or decreasing tax evasion of natural and legal persons*, Master's thesis, Accounting field, Dana Institute of Higher Education, Accounting Department, 2021.

[15] M. Salehi, S. Parvizi Fard and M. Ostovar, *The effect of tax culture factors on tax compliance among taxpayers*, Tax Res. J. (2014), no. 23, 186–214.

[16] M.N. Sharafat and R. Moshrefi, *Simulation of gas production from Iran's independent fields using Hubert's theory: A system dynamic model*, Energy Econ. **8** (2010), no. 30, 63–95.

[17] V.U. Trivedi, M. Shehata and S. Mestelman, *Attitudes, incentives, and tax compliance*, Canadian Tax J. 52 (2005), 29–61.

[18] S.K.R. Zaidi, C.D. Henderson and G. Gupta, *The moderating effect of culture on e-filing taxes: evidence from India*, J. Account. Emerg. Econ. **7** (2017), no. 1, 134–152.