

Designing a model of smart financial monitoring in public sector accounting: Using the interpretive structural modeling (ISM)

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(Communicated by Ehsan Kozegar)

Abstract

This study aimed to implement interpretive structural modelling for Smart Financial Monitoring in the accounting and reporting system of the public sector of Iran. In terms of methodology, this research was qualitative-quantitative research conducted by interviewing the experts in the qualitative section. The statistical population was the qualitative section of university professors in the field of accounting and senior auditors of the Ministry of Finance and the Audit Court. In this study, we interviewed 12 university professors in the field of accounting and senior auditors of the Ministry of Finance and the Court of Calculations of saturation mode. Data analysis showed that content factors had the highest penetration power among variables. These factors include efficient and effective intelligent financial supervision, increased transparency in financial reports information, the possibility of comparing organizations' performance with intelligent financial supervision, the ability to verify functional data and prevent the creation of fabricated data, the ability to exchange information between governments, supervisors, stakeholders and citizens, and improving the quality of accountability. Based on the results of the research in intelligent financial supervision, the index of the utilization of new communication and information technologies, resources and human capital index, environmental factors index, content factors, quantification index, regulations and standards, regulatory mechanisms index, risk management index, business operational system index and structural components index is of great importance, but the index of in-service periods is of moderate importance. This study can be a good start for smart financial monitoring in the accounting and reporting system of the country's public sector.

Keywords: interpretive structural modeling, smart financial monitoring, accounting system, public sector reporting
2020 MSC: 91G45

1 Introduction

Today, the importance of financial supervision has been revealed to everyone. Having a healthy society has a direct relationship with the type and manner of supervision. The public sector is also one of the most important

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sectors in the financial system of any country, due to the fact that a lot of capital is hidden in this sector and it is necessary that this sector, especially in the field of government transactions, is always under continuous and effective supervision because the lack of necessary protection of property and Government financial operations will result in the government's failure to respond to macro policies to solve the general needs of the society. In the literature on public finance, it is hidden that compliance with laws and regulations is the main priority for conducting operations in the public sector, so the legislator in the country has decided to ensure maximum compliance with laws and regulations through centralized supervision in the executive branch. Financial supervision before and during spending is carried out through accountants appointed by the Ministry of Economic Affairs and Finance [13].

The volume and variety of financial data in the world is increasing and the old monitoring methods cannot meet the need. Therefore, machine learning and artificial intelligence can be one of possible solutions to facilitate the supervision of the financial sector. Also, artificial intelligence can help regulators and supervisors in making decisions, designing and changing and setting new financial supervision rules [9].

2 Theoretical foundations and research background

2.1 Financial monitoring and financial reporting

Monitoring is one of the tools that help to realize and fulfill the responsibility of accountability. Unfortunately, in the laws and regulations as well as in the literature, there is no comprehensive definition of supervision and especially financial supervision, but in a way, financial supervision can be defined as follows: supervision in the general sense is an activity that compares the shoulds with the ones, the desirables with the existing ones and forecasts. compares with functions. The result of this comparison will be a clear picture of the similarity or differences between these two groups of factors. Supervision in its own sense includes all controls that are applied before and after the consumption of financial resources. The main goal is to establish the necessary controls in order to ensure compliance with the laws and regulations and budget limits for the use of financial resources in approved programs and activities. Establishing a suitable financial monitoring system helps to ensure the correctness and accuracy of the legality of financial activities related to the implementation of the budget, the compliance of expenses and other payments with relevant laws and regulations, and the non-exceeding of expenses from approved credits [7].

2.2 The impact of information technology on financial reporting

There are various technologies for financial reporting, the most common of which is the World Wide Web. The main reason for using the web is the low cost (for users and suppliers) and easy access to company information through the network. The web not only enables visual and voluminous communication of company reports, but users can quickly get the required information at the right time. The web has provided a lot of information that is different from what was available in traditional reporting. The web has provided a lot of information that is different from what was available in traditional reporting. Superior data communication has improved the accessibility of information and facilitated step-by-step access to information. Although the measures taken at the level of the world and Iran can to some extent indicate that the accounting profession, like other professions, is trying to change and harmonize with modern technology, but despite the problems in first-level reporting, the accounting profession cannot make this claim. which has used all the available facilities and conditions to be in harmony with the advances in information technology [10].

2.3 Business intelligence in the accounting and reporting system

Business intelligence systems are analytical information system that results from the combination of three elements [15].

- The process of collecting, analyzing and disseminating information from internal and external sources.
- A set of tools, technologies and software products used in the above-mentioned cases [8].
- Knowledge that represents the process of collecting and analyzing data and is embedded in the information published within companies [16].

In the case of business intelligence systems, it seems that these systems are "the main driver of change in reporting and analysis, budgeting, non-financial and external management accounting and cost allocation; Even if the nature of these changes has not been highlighted. Moreover, [2] have suggested that the use of BI systems in existing balanced scorecards can improve the strategic management process, and many authors have observed that BI systems can From the design, process of calculation, analysis and visualization of indicators of a performance measurement system [2]. Researchers also discuss the potential of the advanced approach of business intelligence [4], business analysis, in uncovering and verifying causal relationships in measurement systems. They have reflected on performance [1].

Business intelligence makes it possible to present various comparative reports such as the results of historical surveys, the usefulness of specific proposals, the effectiveness of information distribution channels along with the simulation of results related to development and future forecasting based on certain assumptions [6].

Emrayi and Azar [5] research identified the key factors and provided an effective model for monitoring and evaluating the financial performance of the public sector in performance-based budgeting. The research was conducted as a combination of quantitative and qualitative with a grounded theory method for qualitative data analysis. The data was collected from experts and experts and senior managers in the field of budgeting and financial supervision of the public sector. The findings of the research include the identification of effective concepts for monitoring and evaluation in the form of six main codes including the central category of causal factors, intervening factors, background factors, strategies and consequences and developing an effective and comprehensive model for monitoring and evaluating the financial performance of the public sector in budgeting based on It depends on the performance. In the proposed model of the main codes, legal and regulatory factors, organizational structure and culture factors, financial and budgetary factors, monitoring and evaluation structural factors, content and managerial monitoring factors, motivational and psychological factors, technological and informational factors, economic factors, political factors have been identified. and international and cultural and social factors.

Najari et al. [10] conducted research to apply business intelligence in the quality of financial information with an emphasis on the principles and limitations and measurement in accounting. According to the research results, business intelligence increased the quality of financial information and reduced the limitations related to the preparation of financial reports. There was also a relationship between business intelligence and the quality of information related to accounting constraints and the quality of information related to accounting measurement.

Rikhardssona and Yigitbasioglu [14] studied the impact of business intelligence on financial reporting. According to their results, executives see technology, data and analytics as a transformative force in business. As a result, many organizations are implementing business intelligence and analytics technologies to support reporting and decision-making. Traditionally, management accounting is the main support for decision-making and control in an organization. As such, it has obvious links to business intelligence and analytics technologies and can benefit from the application of these technologies.

Nespecaand and Chiucchi [11] studied the impact of business intelligence on reporting content. Their results also show how business intelligence can influence reporting content. By implementing business intelligence systems, reports can be customized based on the needs of decision-makers. Also, they are enriched with new dimensions of analysis. In addition, the research findings improve the strategic management process by providing empirical evidence about the role that business intelligence systems play. Business intelligence systems play an important role in speeding up the implementation of an advanced management accounting tool, i.e. balanced assessment. Also, this study shows how business intelligence systems can help to calculate the process indicators of integrated management systems. By obtaining real-time data, business intelligence systems affect the quality of data used in the calculation process, and the basis for calculating indicators in an automatic method and updating data based on balanced evaluation by companies is provided, business intelligence systems affect the calculation method implemented.

3 Research methodology

According to the purpose and nature of this research, in terms of method, it was a qualitative research that was conducted by interviewing research experts. The approach of the study in the qualitative part was interpretive structural modeling. The statistical population was university professors in the field of accounting and senior auditors of the Ministry of Finance and the Audit Bureau. In this section, sampling was done theoretically. In theoretical sampling, events are sampled, not necessarily people. If people are also referred to, the main and key goal is to explore events. Although there is no specific rule for sample size in qualitative strategy, 6 to 8 units for homogeneous groups and 12 to 20 units for heterogeneous groups are suggested. The interviews continued until theoretical saturation was ensured. In this study, saturation happened with 12 experts (university professors in the field of accounting and senior

auditors of the Ministry of Economic Affairs and Finance and the Audit Bureau). Sampling was done in the framework of the logic of the qualitative method and purposefully. Two methods of targeted and snowball sampling were used in sampling. Usually, in qualitative researches, purpose-based sampling is used to obtain the most information, so the researcher chose participants who were so-called "rich in information". It means that based on the principle of qualitative research, samples were selected that presented a strong picture of the phenomenon under study. The participants were selected based on the purposeful sampling method of university professors in the field of accounting and senior auditors of the Ministry of Finance and the Court of Audit who were also willing to be interviewed.

One of the most powerful and appropriate methods of analysis in behavioral science and social science research is multivariate analysis, structural equation modeling. Because the nature of such issues is multi-variable and they cannot be solved by the two-variable method (where only one independent variable and one dependent variable are considered each time). Multivariate analysis refers to a series of analysis methods whose main feature is the simultaneous analysis of k independent variables and N dependent variables. The interpretive structural modeling method is used to identify the direct and indirect relationships of a set of elements. One of the distinguishing features of this method is that it can be used to structure complex topics and depict them graphically.

4 Research findings

Table 1 shows the expert members who responded to the interview and their positions. As it is clear from the table, experts familiar with the subject of research in government accounting and university professors were used.

Table 1: Open interview expert members by position

Row	Position	Number
1	Accounting professors	5
2	Senior auditors of the Divan of Accounts	3
3	Senior auditors of the Ministry of Finance	4

Table 2 shows the frequency of expert members responding to the interview based on their educational qualifications. As indicated in the table, the members of the interviewed experts have university education related to accounting and financial subjects.

4.1 Extracting the main and secondary components of the research

Table 2 shows the main and subcategories obtained from the interviews with experts related to smart financial supervision in the public sector.

Table 2: Main and sub-components obtained from interviews with experts

Main component	Sub component
Using new communication and information technologies	<ul style="list-style-type: none"> • Organizational intelligence (business intelligence) • Management dashboard • Preparation of consolidated databases in the financial structure • Creating comprehensive information systems • Creating intelligent controls in operational systems • Classified and quick access to information • Upgrading information and communication systems based on new technologies • Improving the security of information systems and network communications • Identifying software security holes • Determining the exact criteria for process monitoring • Warning systems • Cloud computing • Artificial intelligence • Machine learning • Computational models (genetic algorithm) • Knowledge-based systems (expert systems)

In-service courses

- Standard training courses in public sector financial structures
- Preparation and compilation of bylaws for the empowerment and individual development of employees
- Administrative health system
- Focused creativity with a development approach
- Data analysis courses
- Responsibility and accountability
- Clarification of tasks
- Creating organizational commitment in employees
- Individual ability
- Building trust in employees
- Strategic thinking (determining and implementing administrative policies)
- Thinking of teamwork (chain)
- Critical approach
- Systemic and process approach
- Information technology general knowledge courses

Business operating system

- Human resource management (meritism)
- Improving the decision-making system
- Implementation of desirable management principles
- Strategic management (understanding research goals and methods)
- Admin dashboard
- Web service connection with key data references
- Establishing and updating internal controls based on information technology
- Optimal delegation of authority
- Prevent violations
- Applying the knowledge and experiences of competent international authorities
- Applying punishment and encouragement system
- Health and safety of information
- Compliance with reporting standards

Regulatory mechanisms

- Timely and targeted regulatory controls
- Compliance with the principles of budget balance and priority of income over expenses
- Preventing the interference of cost credits with asset acquisition credits
- Ensuring the use of financial resources in the legal place (contradiction)
- Management of assets and liabilities
- Effective monitoring of organizations' incomes, expenses and resources hierarchies (classification of income sources and expenses)
- Improving the quality of information, preparing and publishing financial reports
- Risk Assessment
- Increasing trust and reliability of data
- Motivational factors

Structural components

- Qualitative characteristics of information
 - Distinguish between public and private sector
 - Institutionalizing financial supervision with a systemic approach
 - Monitoring, reporting and information disclosure
 - Unanimity in decisions in the field of financial supervision
 - Increasing the importance of monitoring before and during spending
 - Independence of accountants and auditors
 - Observance of government efficiency in operations
 - Proper functioning of the organization
 - Dealing with organizational silence
 - Organizational Agility
 - Reduction in costs
 - Increasing efficiency and effectiveness
 - Organizational information
 - Connections
 - Organizational Culture
-

Resources and human capital

- Organizational Commitment
- Increasing the responsibility of managers
- Improving the decision-making quality and pragmatism of managers
- Specialization in supervisions
- Training of academic and expert human factors
- Implementation of a competitive system in the selection of efficient and effective forces
- Increasing the efficiency and effectiveness of employees
- Administrative financial health
- Psychological condition of employees
- Ethical issues
- Rule of law
- Professional skills
- Mistakes
- Exams
- Evaluation centers
- Criticism culture

Content factors

- Measuring effective and efficient intelligent financial supervision
- Increasing transparency in the information of financial reports
- The possibility of comparing the performance of organizations with intelligent financial monitoring
- The ability to confirm functional data and prevent the creation of fake data
- The ability to exchange information between the government, observers, stakeholders and citizens
- Improving the quality of response

Environmental factors

- Regulatory bodies
- Stakeholder decisions
- Establishment of a culture of accountability to supervisors and people
- Resolutions of the government and parliament
- Justice-oriented social responsibility
- Increasing public belief and trust
- Transparency and accountability of financial supervisors
- Interpretive perceptions in the implementation of monitoring and evaluation
- Imposed and tasteful comments

Laws, regulations and standards

- Revision of laws, regulations and financial standards
- Reforming the budget and financial structures of the country's public sector
- Applying the new operational budgeting structure
- Adaptation of operational budget, accrual accounting and operational audit
- Formation of financial and budget working groups in the three forces of the country
- Using experienced experts in developing public sector standards
- Liquidity management (timely allocation and distribution of government spending liquidity)

Risk management

- Implementation risks of design and implementation (implementation risk)
- Risk of compliance with financial laws and regulations (legal risk)
- Changing public sector accounting standards
- Inadequate tests
- Lack of manpower
- Improper planning
- Inappropriate base data
- Implementation time
- Liquidity risk
- Planning

In order to check and draw the levels, first the components or structures obtained in the previous stage were identified using ground theory and coded to draw the initial and final self-interaction and received matrices. Coding of these structures for examination in the model of intelligent financial supervision in the accounting and reporting system of the public sector of the country was done with the following signs:

C01: Using new communication and information technologies

- C02: In-service courses
- C03: Human resources and capital
- C04: Environmental factors
- C05: Content factors
- C06: Laws, regulations and standards
- C07: Supervisory mechanisms
- C08: Risk Management
- C09: Business operating system
- C10: Structural components

The first step in structural-interpretive modeling is to calculate the internal relationships of the indicators. Experts' point of view is used to reflect the internal relationships between indicators. The matrix obtained in this step shows which variables a variable affects and which variables it is affected by. Conventionally, symbols like Table 3 are used to identify the relationship pattern of elements.

Table 3: Modes and signs used in expressing the relationship of variables

O	X	A	V
Absence of relationship	Bilateral relationship	Variable j affects i	Variable i affects j

The structural self-interaction matrix consists of the study dimensions and indicators and their comparison using four modes of conceptual relationships. The resulting information is formed based on the method of interpretive structural modeling of summation and the final structural self-interaction matrix. According to the signs listed in Table 3, the structural self-interaction matrix will be as shown in Table 4.

Table 4: Structural autocorrelation matrix of SSIM

Main	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10
C01		A	V	V	A	A	V	V	V	V
C02			V	V	V	A	V	V	V	O
C03				A	A	A	V	V	V	A
C04					A	A	A	V	V	O
C05						A	V	V	V	O
C06							V	V	V	V
C07								V	A	A
C08									A	A
C09										A
C10										

The received matrix is obtained by transforming the structural self-interaction matrix into a two-valued matrix of zero and one, which is called the primary access matrix. There are only zero and one numbers in this matrix. The rule of substituting zero and one for quadruple prime numbers (2, 1, -1 and 0) is as follows:

- If the intersection of criteria (i,j) in SSIM is equal to 1, in the availability matrix, cell (i,j) is equal to 1 and cell (i,j) is equal to zero.
- If the intersection of criteria (i,j) in SSIM is equal to 2, both cell (i,j) and cell (i,j) are equal to 1 in the access matrix.
- If the intersection of criteria (i,j) in SSIM is equal to 0, both cell (i,j) and cell (i,j) are equal to 0 in the availability matrix.
- If the intersection (i,j) is equal to -1 in SSIM, cell (i,j) is equal to 0 in the availability matrix and cell (i,j) becomes equal to 1.

$$D = \begin{bmatrix} & C_1 & d_{12} & \cdots & \cdots & C_n \\ C_1 & 0 & d_{12} & \cdots & \cdots & d_{1n} \\ C_2 & d_{21} & 0 & \cdots & \cdots & d_{2n} \\ \vdots & \vdots & \vdots & 0 & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots & 0 & \vdots \\ C_n & d_{n1} & d_{n2} & \cdots & \cdots & 0 \end{bmatrix} \quad (4.1)$$

in matrix D, which is the primary access matrix, instead of each of the signs d_{ij} , zero and one are set, C_j also indicates the components of intelligent financial monitoring in the accounting system of the public sector.

The final access matrix for the criteria is obtained by taking into account the expansion relationship so that the initial access matrix is compatible. In this sense, the initial matrix must be raised to the $k + 1$ power; In order to establish a stable state ($M^k = M^{k+1}$), in this order, some elements of zero will also be converted to 1, which will be shown as. (1*)

After creating the relationship matrix or the initial access matrix, you must get the final access matrix using the following relationships: (the matrix I is the same):

$$M = D + I \quad (4.2)$$

$$M^* = M^k = M^{k+1}, \quad k > 1 \quad (4.3)$$

In large and complex systems, it is assumed that each part can be obtained by itself. Therefore, all the principal diameters of the final matrix of the system are equal to 1. In this sense, we add the same matrix with the initial access matrix to get the final matrix. The properties of the final matrix are:

$$M^2 = M \quad (4.4)$$

in this sense, we will increase the obtained final matrix until the above condition occurs and the obtained matrix will be the final matrix. The number of 1's in the first line represents the lines or effects that come from the first criterion. The number of 1's in the first column shows the effects that are placed on the first criterion. A component that affects all system components and no component is affected is called a source. The received matrix of research variables is presented in Table 5.

Table 5: Received matrix of research variables

RM	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10
C01	1	0	1	1	0	0	1	1	1	0
C02	1	1	1	1	1	0	1	1	1	0
C03	1	0	1	1	0	0	1	1	1	0
C04	1	0	1	1	0	0	1	1	1	0
C05	1	0	1	1	1	0	1	1	1	0
C06	1	1	1	1	1	1	1	1	1	1
C07	1	0	1	1	0	0	1	1	1	0
C08	1	0	1	1	0	0	1	1	1	0
C09	1	0	0	1	0	0	1	1	1	0
C10	1	0	1	1	0	0	1	1	1	1

To determine the relationships and leveling of the criteria, the set of outputs and the set of inputs for each criterion should be extracted from the received matrix.

- Access set (row elements, outputs or effects): variables that can be reached through this variable.
- Prerequisite set (column elements, input or effects): variables through which this variable can be reached.

The set of outputs includes the criterion itself and the criteria that are affected by it. The set of inputs includes the measure itself and the measures that affect it. Then, the set of bilateral relations of the criteria is determined.

For the C_i variable, the access set (output or effects) includes the variables that can be reached through the C_i variable. The prerequisite set (input or effects) includes the variables through which the variable C_i can be reached.

After determining the achievement set and the prerequisite set, the subscription of the two sets is calculated. The first variable for which the commonality of the two sets equals the attainable set (outputs) will be the first level. Therefore, the elements of the first level will have the most influence in the model. After determining the level, the criterion whose level is known is removed from the whole set and the set of inputs and outputs is formed again and the next variable level is obtained.

Therefore, the variables "Using modern communication and information technologies", "Environmental factors", "Supervisory mechanisms", "Risk management" and "Business operating system" are the first level variables. After identifying the first level variable(s), these variable(s) are removed and the set of inputs and outputs is calculated without considering the first level variables. The common set of identification and the variables whose commonality is equal to the set of inputs are selected as second level variables.

According to the output of ISM calculations, the variable "resources and human capital" is the second level. To determine the elements of the third level, the variables of the second level are removed and once again the set of inputs and outputs is calculated without considering the variables of the second level. According to Table 5, the common set of identification and the variables whose commonality is equal to the set of inputs are selected as the third level variables. According to the output of ISM calculations, the variables of "content factors" and "structural components" are the third level. And the variable "in-service courses" is at the fourth level. Finally, "laws, regulations and standards" will be the fifth level variable and the most influential variable of the model. The final model of the levels of the identified variables is shown in Figure 1. In this diagram, only the meaningful relationships of the elements of each level on the elements of the lower level, as well as the meaningful internal relationships of the elements of each row are considered.

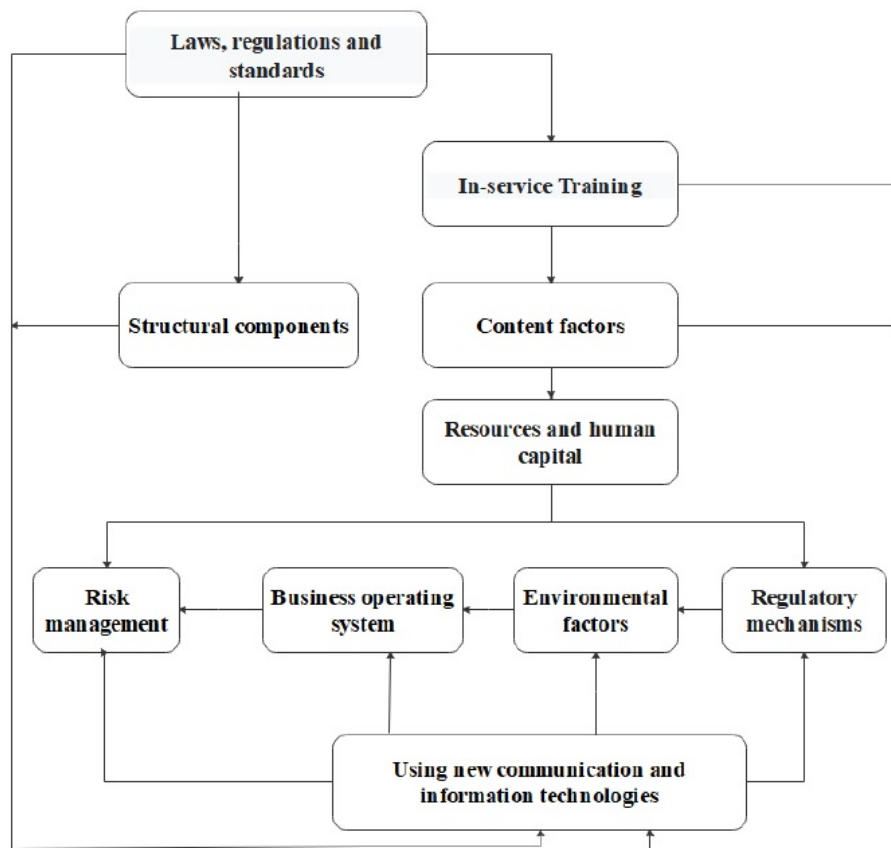


Figure 1: Interpretive structural modeling of intelligent financial monitoring in the country’s public sector accounting and reporting system

Based on structural-interpretive modeling calculations, it is determined that "laws, regulations and standards" is an independent exogenous variable that is not affected by any variable in the model. In the (ISM) model, the interrelationships and influence between the criteria and the relationship of the criteria of different levels are well shown, which leads to a better understanding of the decision-making environment by managers. In order to determine the key criteria, the influence and dependence of the criteria are formed in the final access matrix. Based on Table 6, it shows the power-dependence diagram for the studied variables in Figure 2.

Table 6: The power of penetration and the degree of dependence of research variables

Component		Penetration rate	Dependence rate
C1	Using new communication and information technologies	6	10
C2	In-service courses	8	2
C3	Human resources and capital	6	9
C4	Environmental factors	6	10
C5	Content factors	7	3
C6	Laws, regulations and standards	10	1
C7	Supervisory mechanisms	6	10
C8	Risk Management	6	10
C9	Business operating system	5	10
C10	Structural components	7	2

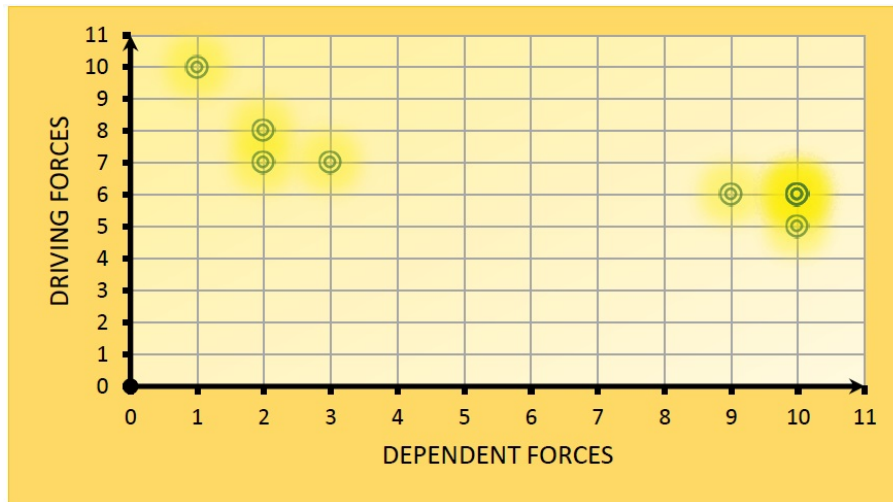


Figure 2: Chart of power of influence and degree of dependence (Mic-Mac output)

Based on the strength of dependence and influence of variables, a coordinate system can be defined and divided into four equal parts. In this research, based on the power of influence-dependence diagram in Figure 2, the business operating system variable is placed in the stimulus subgroup, this variable has a high power of dependence and little influence, which is in the hands of the dependent variables, and in a way, it is the result of the development process of the financial system. Less can become the basis of other variables.

Also, according to Figure 2, another group of variables are located above the group of high influential stimuli. These variables include in-service periods, laws, regulations and standards and content factors and structural components have a strong influencing power, but their dependence power is weak, which are actually key variables and by making changes in them, you can influence the rest of the variables and be known as independent variables.

Next, the other category of linked variables includes the use of information technology, resources and human capital, environmental factors, risk management and regulatory mechanisms that have a strong influence and also a strong dependence force, these variables are actually components that are unstable, in the sense that doing Any action on these components, in addition to directly affecting other components, can also affect the component itself in the form of feedback from other components. In this analysis, no variable was obtained for autonomous variables that have a low degree of dependence and influence. In general, because these criteria have weak connections with the system, they are generally separated from the system, and a change in these variables does not cause a serious change in the system.

One-sample T-Test was used to check the importance of variables. The average of the indicators was compared with the average of the society, which is equal to 3. The results in Table 7 show that the index of using modern communication and information technologies, the index of resources and human capital, the index of environmental factors, content factors, the index of laws, regulations and standards, index of regulatory mechanisms, index of risk management, index of business operating system and index of structural components are of high importance, but the

index of in-service periods is of medium importance.

Table 7: One-sample t-test results to check the importance of indicators

Component	Mean difference	T-test statistic	significance level	95% confidence interval	
				Lower limit	Upper bound
Using new communication and information technologies	0.38	4.09	0.001	0.157	0.452
In-service courses	0.037	-0.443	0.658	-0.188	0.119
Human resources and capital	0.45	1.98	0.049	0.003	0.565
Environmental factors	0.61	5.30	0.001	0.213	0.766
Content factors	0.855	2.40	0.018	0.427	1.284
Laws, regulations and standards	0.782	2.48	0.015	0.421	0.905
Supervisory mechanisms	0.68	3.28	0.005	0.438	0.841
Risk Management	0.76	2.59	0.001	0.584	0.922
Business operating system	0.77	2.23	0.023	0.384	0.819
Structural components	0.981	3.75	0.001	0.421	0.905

5 Discussion and conclusion

According to the results of Table 6 regarding the power of influence, laws, regulations and standards have the most power of influence among intermediaries. In democracy, accountability is considered an integral part of good governance, and one of the things that is considered in the value of the accountability system is financial supervision. Financial supervision in our country is carried out in two ways: pre-spending supervision and post-spending supervision. The post-expenditure monitoring is carried out by the auditors of the National Audit Office, and the pre- and during-expenditure monitoring is carried out by the accountants appointed by the Ministry of Economy and Finance, according to Article (31) of the country's Public Accounts Law. In the literature of public finance, it is hidden that compliance with laws and regulations is the main priority for conducting operations in the public sector, so the legislator in the country has decided to ensure maximum compliance with laws and regulations through centralized supervision in the executive branch. Among the changes surrounding the accounting profession, we can mention the following: the formulation and enforcement of public sector accounting standards, the change of the accounting system from adjusted cash to accrual, the change of the budgeting system from the incremental method to the performance-based method. It seems that according to the upcoming changes and the changes in the way of operation, the way of monitoring should also undergo changes [12].

The results of table number 7 showed that the index of utilization of modern communication and information technologies, the index of resources and human capital, the index of environmental factors, the index of content factors, the index of laws, regulations and standards, the index of regulatory mechanisms, the index of risk management, the index of business operating system and the index The structural components are of high importance, but the index of in-service periods is of moderate importance. Success in the new economic system is the use of opportunities, information and communication technology provides us with the right opportunity to make accurate decisions so that we can make the best decision at the right time. These systems have the characteristics of autonomy, reasoning, and reactivity, as well as usability, which includes a tool that is reactive and performs actions automatically. These tools are able to perform tasks in the real world, so that they perform purposeful actions and can influence the environment and decision-making alone, and act like a chemical, physical activity [3]. Due to the massive amount of information and variables, it is necessary to use tools that have maximum speed and minimum errors. Expert systems are tools that predict, analyze and make decisions instead of humans, these systems solve problems in specific fields through computer programs and using the rules used by experts, which is a support for people's decisions. One of the tools of business intelligence is online analytical processing, this technology is a new answer to the problems of decision support systems.

Online analytical processing technology provides tools and concepts through which it is possible to perform an effective and desired analysis on any type of data [10].

Considering that the results showed that the use of new information and communication technologies has a high degree of dependence on the indicators of in-service courses, appropriate resources and human capital, and the necessary laws, regulations and standards, it is suggested that government officials improve the monitoring capacity in the accounting and reporting system. The public sector should use the latest information and communication achievements

and monitor and introduce the latest hardware and software. And in this connection, it is necessary to provide simultaneous training to the employees. In order to get better results from these technologies, standards and laws and regulations need to be adjusted. Also, the creation of legal frameworks and the implementation guarantee of laws and regulations, the establishment of necessary coordination between legislative institutions and operational institutions, giving legitimacy to the institutions in charge of equipping the senior auditors of the public sector with the necessary competence and competence and monitoring them should be taken into consideration.

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