Applying Soft Systems Methodology to Implement Strategy in the Organization: A Case Study of Improving the Motivation System of Statistic Center

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A B S T R A C T

The increased complexity of contemporary organizations necessitates adapting analysis and decision-making models as cognitive and analytical tools to cope with this complexity. Systemic thinking and its methodologies offer a way to overcome these complications to a desirable degree. Strategies are enacted in the organization when they are operationalized, as the diverse viewpoints of its stakeholders often hinder the practical attainment of the organization's strategic objectives. Hence, the researcher selected soft systems methodology (SSM) as one of the prevalent systems thinking methodologies to address this challenge and to achieve a relative alignment among the stakeholders' interests. Given that intervention in the organization is the primary prerequisite to resolving organizational problems with this methodology, the Iran Statistics Center (ISC) was chosen as a case study. At the onset of the intervention to enhance the processes of implementing the strategies of ISC with SSM, the main steps of operationalizing the strategies were elicited in the planning department, and then from the steps to devise an operational plan to increase employees molivation the motivation of employeesThe operational plan, developed through stakeholder involvement and consideration of diverse perspectives, facilitated the formulation of task strategies with a focus on executability. This approach aimed to bridge the gap between the strategic and operational layers within ISC. Additionally, the development of evaluation indicators enabled the monitoring of strategy execution within ISC. Besides developing a strategic and operational plan, this research also had other outcomes, such as organizational learning by using SSM. Through the education and facilitation of the researcher and the department staff, they became empowered to develop an operational plan for other strategies.

1. Introduction

Top managers establish strategic objectives in many organizations, particularly governmental organizations in Iran. Regardless of their validity, middle managers must accomplish them within the predetermined period. Thus, one of the most crucial challenges confronting managers is how to enhance the implementation of objectives and strategies in their organizations. Some researchers contend that the causes of the non-implementation of strategies are largely attributed to the non-implementation of strategies, and there is invariably a deep gap between the strategic and operational layers of the organization. This group employs various methods and models (the number of which is increasing daily) to address the problem and diminish the gap between their organization's strategic and operational layers (David, 2011). It can be asserted that most of those methods are utilized to resolve a portion of strategic problems (Gurl, 2017), and few comprehensively offer management for implementing strategies in the model organization. One of the most extensively used methods in strategy implementation is the BSC, which assesses performance from only four perspectives and more than offers a solution for implementing strategies in an organization (Kaplan and Norton, 2005; 1996). Considering the existing overview of systemic approaches and their success in other fields, this research aims to use the capabilities of this approach's methodologies to implement organizational strategies better and reduce this gap. Among the system methodologies, the soft systems methodology has been selected due to its ability to respond to the how instead of finding the why and its other capabilities in facing complex environments with multiple stakeholders and different worldviews through greater employee participation. Given the necessity of intervening in the organization and implementing its steps, the Iran Statistics Center (ISC) was chosen as the study organization to apply this method. ISC exhibited a preference for employing soft methods to address its organizational challenges. It further explained the intervention steps for developing a strategic, operational plan (a plan that can cover the existing gap). After the researcher's intervention in that center's planning department, how to better implement the strategy in ISC became an important issue. Since the consensus among people to answer this issue was challenging, the SSM methodology was used as the dominant methodology to solve the problem. It was chosen so that with the help of this methodology, operational steps can be developed to access the center's strategies. In this manner, the gap between the strategic and operational layers within the organization was bridged to the desired extent. However, due to research limitations, certain steps were implemented solely for the priority strategy of the center titled "Improving and strengthening the motivational system of employees." It should be noted

that the ISC had previously developed its strategic plan by outsourcing, but this plan could not be fully implemented due to the top-down view. The lack of participation of employees in its development (a problem that most organizations face) and the heavy expenses paid for developing a strategic plan had little help in achieving their goals. In this research, with the help of SSM, in addition to formulating an operational planning step by step, involving people in how to implement strategies in the organization and increasing the commitment and motivation of people, the implementation of organizational strategies was helped to an optimal extent. Delegating the continuation of the work to the planning department reduced the organization's costs.

2. Literature review

A review of the prior research reveals that in the past, the extant methods in the domain of strategic management had a rigid and top-down approach to implementing strategies in the organization (Stead, 2019). However, today, with the complexities of organizations and the proliferation of organizational learning concepts that have a soft and bottom-up view, the impact of systems thinking in management research, including in the domain of strategic management, is conspicuously evident (Prewitt et al., 2012; French, 2009). One of the most significant research conducted in the domain of systemic thinking and strategic management is Stacey's renowned book titled "Strategic Management and Organizational Dynamics" which deals with the ontology of strategic thinking (Stacey, 2007; Stacey and Mowles, 2016). In order to demonstrate the position of systematic approach methodologies in global research in management, Mengers and his colleagues explicate the recent progress of systemic thinking and its expansion in management science in their article. Initially, they reviewed the important system methodologies, including the methodology used in this article. Then, they explained the scope of application of this methodology in various domains such as strategy, organization, production, and quality. They state that the entry of systemic thinking into the strategy domain has a history of 50 years, and they believe that the first strategy planning was done by systemic thinkers (Mingers and White, 2010).

Ackoff was the first person to introduce systemic issues to strategy (Ackoff, 1979). He considers one of the main reasons for his work to be the complexities between interactive relationships and subsequent variables in strategic decision-making. Following him, some researchers used this approach for planning and strategic management (Ma et al., 2011). Haines also used the concepts and tools of systems thinking for strategic planning management

(Haines, 1998). One of the latest related articles in this domain is the work done by a leading Chinese company to develop its performance management system. Initially, this company used the balanced scorecard method for its performance evaluation programs. However, with the emergence of challenges such as rapid change in demand and economic recession in the world, it was not suitable to use this method, so it decided to design a new system for performance evaluation by applying SSM. According to the senior management, the results obtained from its implementation indicate the success of this method compared to other methods (Liu et al., 2012). Also, a management consulting center in Japan uses an innovative combination method called "Project Management Methodology" to simulate strategic communication. This methodology combines BSC, SWOT, and SSM strategic map methods. This methodology is a reinterpretation of the SSM method; with the help of other mentioned methods, it should be noted that this method has also been implemented in a consulting company as a case study (Ishino & Kijima, 2005).

In recent years, researchers have considered the success of using this methodology in some studies as proof of its efficiency and use by other companies in the future (Macías-Barreto & Aguilar-Fernández, 2021), Such as the work of Maarif and his colleagues used SSM to develop strategy and improve quality in the coffee industry (Fadhil and et al., 2018) and Belderrain and her team was applied SSM to structure the planning process at a special educational needs school in Brazil (Françozo et al., 2022), at other article SSM used for cultural changes in a large corporation which was split into several smaller separate corporations, under new vision, mission, and leadership, needs a different culture deal with a fuzzy condition for system online management consultant construction (Anisarida et al., 2020). Also, Ebrahimi used soft systems methodology to analyze the cultural change in the National Petrochemical Company (NPC) (Ebrahimi, 2022). Other articles have also benefited from the achievements of SSM in various domains, especially information systems (Checkland and Holwell, 1993; Sun, 2021). Despite its widespread use of SSM in knowledge management and information systems, it has limited application in strategy (Saad et al., 2005; Delbridge, 2008). It can be said that except for the work in which Azar and his colleagues used SSM for strategic modernization in the insurance industry (Fatemi et al., 2022), in which the problem was addressed from a different perspective, this methodology has not been used in the domain of strategy. Some other articles added to the capability of this method by combining SSM with other methods, especially the System Dynamics methodology (Rodriguez and Paucar-Caceres, 2005; Zlatanovic,2015). Also, in the

other paper, the Viable Systems Model and SSM were chosen to intervene in an artisan enterprise in Mexico (Macías-Barreto & Aguilar-Fernández, 2021).

3. Methodology

Peter Checkland was the founder of Soft Systems Methodology (SSM). He cites three important experiences that led him to shift from system engineering to formulate SSM. The organization encountered severe problems in all three cases, but they could not explicitly state them. The conditions of all three projects were ambiguous and unstructured. By summarizing these three projects, Checkland determined how SSM should distinguish itself from rigid approaches (Checkland, 1981).

The common methodology used to implement SSM is the seven-stage learning cycle system, which he introduced in the book Systems Thinking and System Practice, shown in Figure 1.
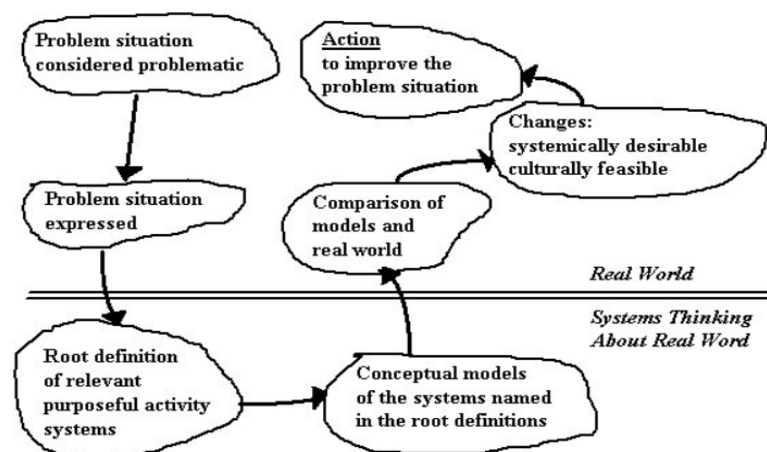

Figure 1. SSM+ implementation steps

3.1. Steps of SSM

Steps 1 and 2: Facing a problematic situation This stage includes entering the problem conditions and identifying the people, culture, standards, and values governing the problem conditions through interviews and discussions, observation, brainstorming, and illustrative images. Illustrative images are cartoon images that depict the actors (in the situation of the problem), consequences, problems, relationships, and conflicts and provide a general idea of the existing situation. Visualizers identify the nature of the situation, determine the related contexts, and ensure the creation of a common understanding and perception according to the different viewpoints.

Step 3: Development of root definitions Providing definitions is one of the requirements of the SSM method. A root definition is a phrase or sentence that describes an ideal system, the objectives of that system, who will be involved in it, who is currently participating in it, and who will be affected by it. It describes what they accept and who influences it. A technique called CATWOE is used to develop root definitions. The word CATWOE is derived from the first letters of several other words and helps the problem owner (employer) formulate the problem using key definitions. The letters that make up this word are:

- The C means customers, that is, those who see profit or loss in this system.
- The A means the actors and people performing the activities in the transformation process.
- The T means the transformation process, which converts input into output in the system.
- The W means the worldview of what gives meaning to the transformation process.
- The O means the owner, who can stop or delete the system.
- The E means the environmental constraints that affect the system but cannot be controlled.

Step 4: Building a conceptual model. A model in SSM is a diagram comprising a series of activities and communication lines between them. These models are directly extracted from the root definitions and express the key activities in the root definitions as expressions. The main goal is to understand more of the activities in the processing process. There are different opinions and beliefs about their activities and communication, and finally, a consensus model is obtained by applying different points of view.

Step 5: Comparing the model with the real world. This stage is designed to structure the negotiations and give them content to improve the existing conditions. At this stage, the models are compared with the real world by using a series of regular questions about each activity and each relationship in the model.

Step 6: Identifying and determining the required changes. This stage includes the systematic determination of desirable, culturally possible changes.

Step 7: The changes determined in the previous step are applied. Finally, it is emphasized that the use of SSM should be collaborative in this step. It is better for as many people as possible to feel that the study process and desired changes belong to them, which is possible with their participation in the methodology. Only in this way will the participants reach a new definition of feasibility by testing and correcting opinions and interpretations. The changes that did not come to mind before the intervention because of the background and culture of the situation can be clarified after it is completed (Hindle, 2023).

4. Conceptual model of strategy implementation

In this section, with the assistance of SSM, a conceptual model was derived for implementing the strategy in the organization, with the involvement of the pertinent employees, to facilitate the implementation of the strategic plan. At the onset of the researcher's intervention in the Planning Department of the ISC, meetings were conducted with the department staff to implement the strategies. During these meetings, which took the shape of brainstorming, the problems and challenges faced by that center in confronting the implementation of strategies were recorded. Moreover, by analyzing and examining the discussions formed in the group with the proposals presented for implementing the strategy by different people (some of which were contradictory), reaching a consensus among the group members became an important challenge. (Mingers and Rosenhead, 2004) Therefore, to address this problem, the researcher suggested using the existing methods in the pluralism approach, which was used due to the familiarity of the group members with the SSM method by the researcher and its extensive use in the literature review. In the following, according to the principles presented (Rosenhead & Mingers, 2001), the following root definition for the strategy implementation system in the organization was explicated.

"A system belonging to the head of the organization, which is used by the planning department and representatives of other departments to extract task strategies (compilation of the operational plan) and communicate it to the employees of the organization to implement the strategy, and this system is limited Financial, time and culture and structure are disproportionately faced." After explicating the root definition, it was time to derive the conceptual model of the activity based on it. At this stage, group discussions were conducted in numerous meetings, and research was conducted in similar organizations, such as John Moore Bryson's strategic planning model in public organizations (Bryson, 1988). This model was derived as shown in Figure 2.

As seen in the conceptual model of strategy implementation, appropriate measures have been defined to measure the model's validity according to the three evaluation criteria of 3E (efficacy, efficiency, and effectiveness) (Checkland and Poulter, 2007). These three criteria are respectively:

A. Efficacy: Does the conversion process work properly?
B. Efficiency: Does the conversion process take place with minimal resources?
C. Effectiveness: Does the conversion process lead us to our original goals?

All three defined criteria were examined during the group meetings. In this way, the efficacy of the model was obtained by attracting the opinion of experts so that each person acknowledged

that the model and the activities defined in it were sufficient for the implementation of the strategy. Further, the model's effectiveness was also determined, considering that the derived activities were based on the purpose of implementing the strategy and were approved by the subject owners. The efficiency criterion was confirmed by comparing it with the previous implementation process in the organization.
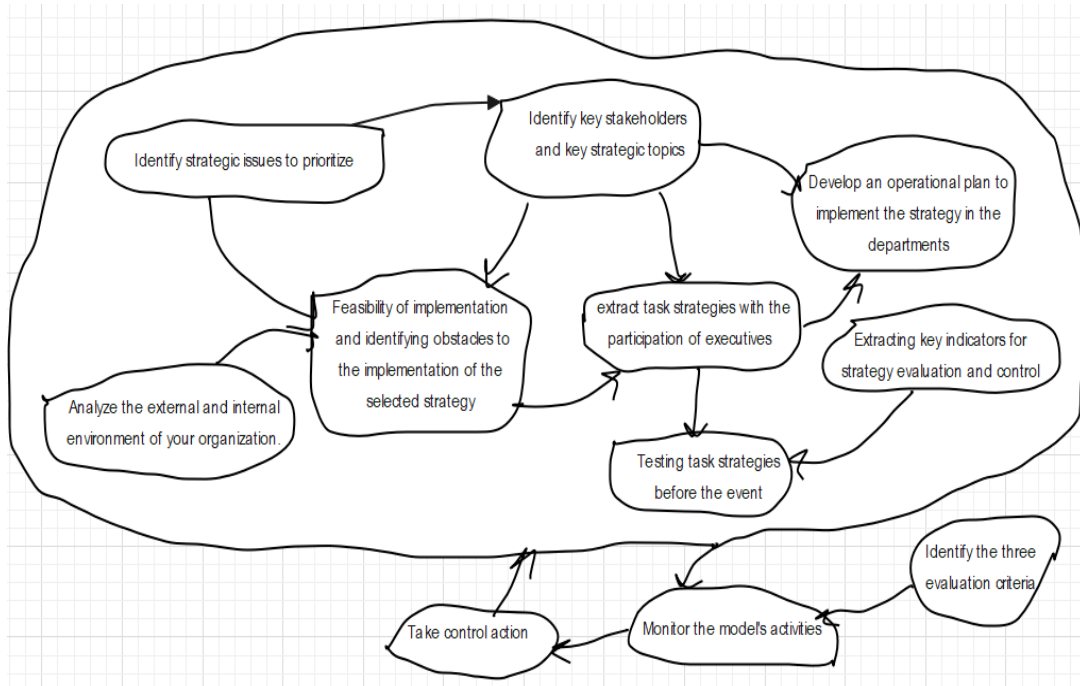

Figure 2. Conceptual model of strategy implementation

The model presented in Figure 2 has the advantage that, compared to other existing models, it reflects the participation of strategy implementers, which helps their implementation in the organization to an optimal extent. Hence, the program derived from this, which has been named the model operational strategic plan. It should be noted that this participation can be achieved through various methods, which was achieved in this research through SSM.

5. Using SSM to implement the strategy of the employee motivation system

The strategy implementation model was the initial theme of the strategy implementation roadmap to initiate intervention in the organization, which was completed during the three years that the researcher was working as a strategic planning consultant of ISC, and finally became a strategy implementation roadmap in the organization (Moghbel Baerz et al., 2021) was presented, which cannot be explicated in this article. Also, some steps derived in the conceptual model of strategy implementation, such as testing strategies in the virtual environment and selecting a priority strategy, have not been explicated, and in the following, other steps for the priority strategy of ISC have been implemented as examples. Considering that at the onset of

the researcher's intervention process, it was necessary to select a group to accompany and participate with him so that the researcher could meet the requirements of the SSM selection method. After consulting with the head of the planning department, seven department employees were selected as the strategic planning team (technical committee) due to their expertise in the domains related to planning. Moreover, due to the low familiarity of the people with the systematic issues and methodology used in the action research process, the researcher provided the necessary education to the selected people for three months. Considering that the issue of strengthening the motivation of employees was one of the challenging issues in ISC and this issue involves stakeholders with different worldviews, according to them, the ways to implement this strategy, which are the same strategies, is a task, it is numerous. Therefore, to derive strategies with an executive guarantee, all of their opinions should be considered. According to the requirements of the SSM method, this work was done by forming different groups of stakeholders to pay attention to their worldviews. In this way, by forming special working groups with each of them, the basic definitions and conceptual models of the strategy system (as a targeted activity system) were derived. In the following, the steps of implementing SSM to derive task strategies related to strengthening the motivational system of employees have been discussed in detail.

5.1. Understanding the problematic situation (employee motivational system)

According to the definition of the strategic problem of strengthening the motivational system of employees above, understanding the problematic situation is recognizing the motivational system of ISC's employees, whose strengthening and improvement has become a discussed issue. In the following, based on triple analysis and rich image, this system's recognition has been discussed to extract targeted activity models for it.

During several meetings with the planning department group, the problem of how to strengthen the motivation of employees in the organization in question was examined from different aspects. From the discussions held in the working groups, the following three tests were analyzed regarding that system.

Analysis 1: This analysis, which was related to the intervention process itself, recognized the stakeholders' worldviews on motivation and identified the following elements.

- The employer in the|ISC was defined as the general manager of the planning office.
- The issue's owners , the strategic planning group, the vice president of development, and the the department managers were defined, and the executors were also considered the strategic planning group or the technical committee.

Analysis 2: which was called social analysis, led to the identification of the following elements.

- Identifying the expected norms or behaviors related to the roles, some of which in the organization in question include employees' respect for managers, more remuneration for specialized work, and participation in training courses.
- Values were identified from the discussions held in the meetings and observations. For example, the planning department director is an exemplary manager because he values scientific research. Also, roles were identified, both official (for example, so-and-so is a manager) and unofficial (for example, so-and-so is a conservative), and it is not permissible to mention all of them here.

Analysis 3: During a meeting with the technical committee, a political analysis was also carried out on the issue of motivation, and in the end, it was determined that in the organization in question, its president and the board of directors are manifestations of power in the motivation system. Also, in each department, people who secretly have influence and have a high degree of power to influence their managers were identified. According to the information obtained in the meetings and the analysis done, in the next step, it was time to draw a rich picture to show what is happening in the target organization about the motivation system. For this purpose, it was necessary to identify the subsystems related to the motivation system in the organization by the researcher and the technical committee. After several meetings, based on the research conducted and the discussions held in the group, the researcher presented an initial rich picture of the motivation system in ISC. After getting approval, it was drawn in the relevant group.

Based on the initial rich picture, the problem of enhancing the motivation of employees encompasses different dimensions, and therefore, several root definitions based on different worldviews could be derived from it. In the continuation of the steps of using SSM to derive conceptual models based on those definitions, it was necessary to form different groups of stakeholders to scrutinize the problem to have a comprehensive view of the motivation system and validate the obtained results. Therefore, a meeting was conducted with the technical committee to identify different stakeholders in the system and to form special groups to participate in the working groups. During this meeting, according to the limitations in the ISC (one of which is the time limit of the participants), three groups were defined with the titles of planning office, staff, and managers, and the number of participants in each group was respectively 12, 7 and 5 people were considered. In the classification, the group of employees and managers were considered so that employees could easily express their points of view in meetings and working groups. During the selection process, careful consideration was given to

factors such as gender, level of education, specialized field, and job position of the individuals. These selections were made in alignment with their distribution within the ISC, ensuring a diverse representation across various demographics and professional backgrounds.

After the preliminary education of the groups with SSM, in the continuation of the work, the initial rich picture of the motivation system was explicated to them for further discussion and investigation, and from the feedback received from them, this picture became complete and finally, as shown in Figure 3.
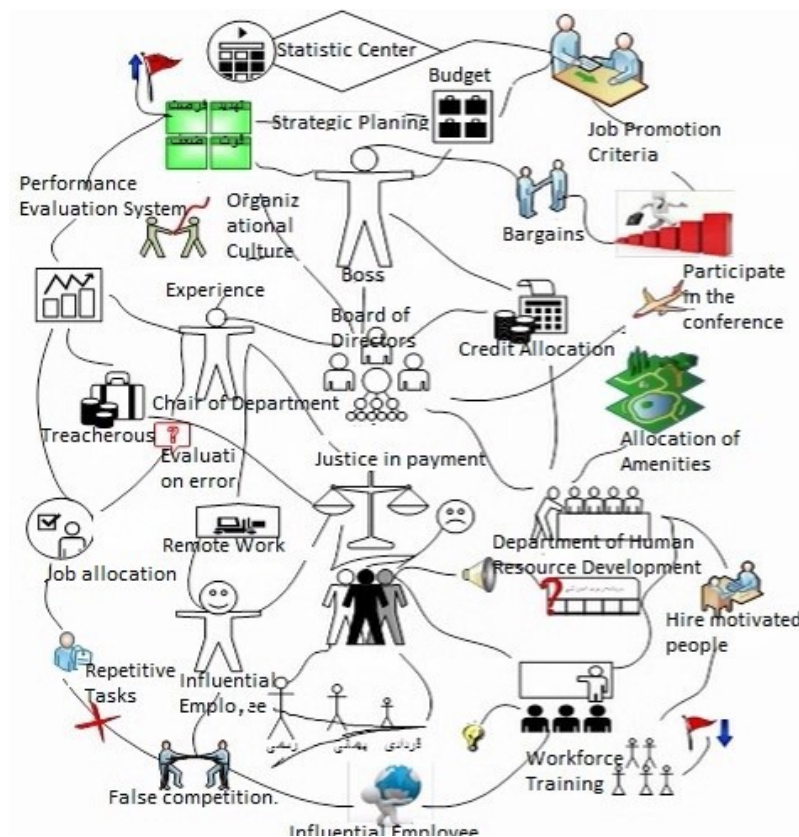

Figure 3. The rich picture of the motivation system

As seen in Figure 3, the important activities related to the motivation system in the ISC are recruitment activities, recruitment and training of employees, empowerment, job promotion, employee evaluation, justice in payments, work allocation, Salaries and benefits and welfare facilities, as well as the key activity of strategic planning, which is the strengthening of the incentive system at the top of all of them, as well as factors such as unfairness in payments, provision of facilities and errors in the evaluation system, and the like. It will cause employees to be demotivated (as obstacles to implementing the strategy), which can be easily seen in the rich picture. All these activities together paint a picture of what is happening in the real world about the motivation system in the ISC.

5.2. Extracting the root definitions and conceptual models of the motivation system

After structuring the problem and forming groups in the previous stages, in the next stage, with the help of the rich picture, a purposeful activities model for the motivation system should be extracted. According to the technical committee's point of view, compared to the activities carried out in the rich picture, which was to increase the motivation of employees, strengthening the motivation system was introduced as the goal of that system. Next, in the specified groups, with the help of CATWOE elements, different root definitions were extracted for that system, and based on them, purposeful activity models or conceptual models were extracted in each group.

5.2.1. The activities of the planning group

The planning group discussed and exchanged opinions, and the group members reached a consensus, defining the elements of CATWOE, as seen in Table 1. By combining these elements according to the principles presented at SSM (Bergvall-Kåreborn et al., 2004), the root definition of "Employee Motivation Enhancement System" was extracted. "A system belonging to the head of the organization, which is created by the head and its managers, the vice president of development and the planning department through activities that motivate employees to reach strategic goals, which this system has legal limitations and lack of credibility is facing."

According to the principles and strategies of using SSM, the activities of the conceptual model should be extracted with the help of the root definition, especially the transformation process and worldview. Therefore, considering the transformation of unmotivated employees into motivated ones was a general transformation process for the motivation enhancement system. In separate meetings, the participants suggested necessary measures based on their worldview. The planning group extracted the list of these activities after standardization, as shown in Table 2.

Table 1. CATWOE elements identified by the planning group

Customers	The head of the organization - the employees of the organization's departments
Actors	The head and managers of the organization - Vice President of Development - Planning Department
Transformation	Turning unmotivated employees into motivated employees
Worldview	Increasing motivation in employees leads to reaching the strategic goals of the organization.
Owner	Head of the organization
Environmental constraints	Lack of credit - legal limitation

Table 2. List of effective measures to increase employee motivation

Description of the activity	Average	Feasibility	Important
Creating justice in payment Training employees according to job needs	86.85	81.2	92.5
Providing facilities to employees (improvement of welfare affairs)	85.6	87.5	83.7
Optimum use of employees' capabilities	84.35	78.7	90
Exact implementation of the law on employee career promotion and meritocracy	84.35	76.2	92.5
Delegation of authority (increasing the authority of employees)	80.6	70.6	90.6
Creating security and a clear career path	78.1	71.2	85
Increasing the salaries and benefits of employees	74.35	68.7	80
Improving the performance of the evaluation system	72.5	50	95
Improving the performance of the evaluation system	67.35	58.7	76

Finally, after accessing the main activities to transform unmotivated people into motivated people, the group established logical connections between the activities, and the conceptual model of the motivation enhancement system of the planning group was extracted.

5.2.2. Activities of the staff group in the staff group

More meetings were needed to understand the issue in order to derive a conceptual model. Finally, according to the discussions and exchange of opinions held in those meetings and the consensus reached between them, the staff defined the elements of CATWOE. By combining those elements (as shown in Table 3), the staff group extracted the following root definition."A system belonging to the head of the organization, which has been created by the managers of the organization and the influential employees, has motivated the employees and created satisfaction in them. This system is facing financial, political, and cultural limitations."

Table 3. CATWOE elements identified by Employees.

Customers	Employees
Actors	Managers of the center - influential people
Transformation	Turning unmotivated or low-motivated employees into motivated people
Worldview	A system that leads to employee satisfaction
Owner	Head of the organization
Environmental constraints	Political, financial, and cultural limitations

In this group, in order to draw a conceptual model similar to the work done in the planning group, necessary measures were taken to select activities that are effective in increasing motivation. Finally, a conceptual model for strengthening employee motivation was extracted after accessing the activities necessary to transform unmotivated people into motivated people and discussions conducted with the employees in their particular meetings. It is worth mentioning that in the list of activities of the staff group, except for the first three items, the rest are different from the activities extracted by the planning group, which indicates the different views of these two groups on a motivational system of employees.

5.2.3. Activities of the group of managers

The group of managers was the last group that participated in the meetings, and the necessary measures to extract their special conceptual model were similar to the two groups of planning and employees, with the difference that reaching a consensus among managers was more difficult than the other two groups. Finally, according to the discussions and exchange of opinions held in their group and the relative consensus that was reached between them, the elements of CATWOE were defined as given in Table 4 by combining these elements of the following root definition by the group of managers was extracted for the motivational system of employees.

"A system belonging to the board of directors, which is created by the president, managers, and employees, as well as the vice president of development through activities that create motivation in employees and managers in order to increase productivity in the organization, which is limited by legal, political and financial is facing."

Table 4. CATWOE elements identified by managers

Customers	Employees (experienced and less experienced)
Actors	managers of the organization The head of the organization-development assistant - managers - employees
Transformation	Improving employee motivation
Worldview	Increasing motivation in employees leads to increasing productivity
Owner	Board of Directors Legal
Environmental constraints	political and financial limitations

Based on this definition and the list of measures extracted by the managers in the relevant meetings, and finally, their conceptual model for strengthening the motivation of employees, the activities extracted by managers are different from other activities extracted from other groups. They have been planning and employees, and in a way, they have shown the main concerns of managers to increase motivation.In general, it can be said that the extraction of conceptual models in this part, accompanied by the participation of different people and their surveys, somehow led to the culture of strategy as a part of the institutionalization of this strategy in the ISC. The more people participate in drawing these models, the better institutionalization will be done. Also, the different conceptual models presented by the groups are a sign of the difference in the participants' views, which were used to extract the general (ideal) conceptual model according to the stated principles.

5.3. The general (ideal) model of the employee motivation system

After drawing the conceptual models by the three groups in this stage according to the SSM stages, these models should be compared with what happens in the real environment (ISC) regarding employee motivation. Finally, through these comparisons, improvement measures, which are the task strategies, should be extracted. Since the comparison of individual models with reality leads to parallel work and takes much time, it was decided that similar to some research done in this regard (Mingers, 2000) to extract a general conceptual model from the employee motivational system. In this way, the common activities of the models extracted by different groups, which are salary increase, justice in facilities and payment, and meritocracy, were listed. The activities related to them were added to the model, which then, From the discussion and investigation of its activities and the group's assurance of their importance and the resurvey conducted regarding the importance of those activities, finally, the ideal (general) model of the system of strengthening the motivation of the ISC employees in a form which you can see in Figure 4, was drawn by the researcher. Each activity in this model has sub-activities. They can be examined as a targeted activity sub-model, and that sub-model's goals are equivalent to strategic goals.
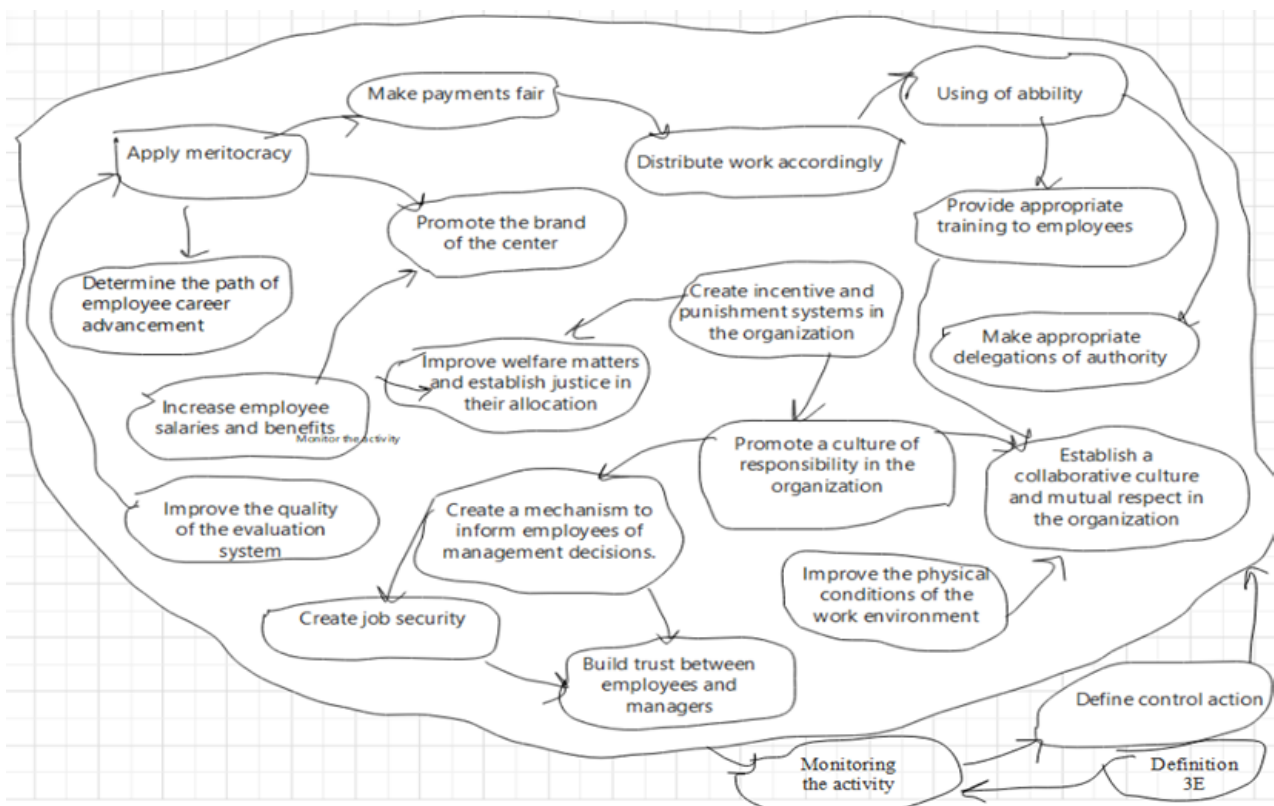

Figure 4. The general model (ideal) of the system of strengthening the motivation of ISC

As seen in Figure 4, this general model does not limit its activities to organizational boundaries and can be divided into different departments. The subject of dispute or the problematic situation in the organization is the formulation of appropriate strategies to increase employee motivation, which can be easily implemented in similar organizations.

5.4. Extracting task strategies to strengthen employee motivation system

In the following, during the meetings with the executives involved in this system, a comparison was made between the activities of the introduced conceptual model and what they do in practice to strengthen the motivation of employees, as can be seen in the picture. Finally, by answering some questions in the comparison, such as (is this activity done? how is this activity done? by whom is it done? What empowerment action is necessary to do it?), they proposed improvement measures to fill the performance gap (between what happens in the purposed world of the system and what happens in the real world) as shown in Table 5 for the tree of the main strategies. These measures are the task strategies that have been extracted with the participation of their executives in ISC.

Table 5. The list of task strategies and relevant executives

Activity (Main strategy)	Improvement action or the task operational	Executives
Apply meritocracy	Preparing the required indicators for meritocracy according to the ISC	Deputy Development Planning Office
	Preparation of birth certificates of the abilities of qualified employees (Clause A of the Civil Service Law)	Deputy Development Planning Office
	Implementation of the appointment letter of the Transformation Council and its supervision (conducting necessary training courses for manager training)	Vice President of Development
Create justice in payments	Review and reform the payment system of the ISC	Planning Office
	Implementation and implementation (managers' training - informing - reviewing)	Development Office All assistants
	Monitoring the implementation in the form of a payment syntactic performance report to get feedback	Planning Office
Increase the salaries and benefits of the employees	Measures to improve the general performance evaluation indicators of the ISC	Public Relations Base Office Planning and Development Office
	Strengthening the relationship with the management organization	Office of the President

As seen in Table 5, the nature of the improvement proposals presented at this stage has made them easily applicable to the organization's operational plan. Thus, the gap between the strategic layer (measures extracted in the conceptual model of the idea) and the operational layer is covered in ISC. Of course, other measures may be suggested, which are limited to these measures due to the existing limitations in the organization and the requirements of the method.

They are considering that each of the activities in the general model is a sub-system for the more extensive system of strengthening motivation (as its sub-activities were specified in the special models of each of the groups). It has short-term goals compared to the motivation enhancement system's primary goal, equivalent to strategic goals in strategic planning. In this way, strategic goals can be achieved by extracting the goals and activities in the general model. After extracting the strategic goals from the technical committee, suitable indicators for each goal were extracted by finding the 3E indicators for each activity in the conceptual model. Finally, with the goals in hand, task strategies, indicators, and respondents, the operational and strategic plan for the next year was compiled in the ISC regarding improving the employee motivational system.

6. Validation and evaluation

Validation in systematic methodologies is always considered a challenging issue. The nature of validity and the type of tests used to validate these methodologies are very different from other methods, especially in the technical and engineering fields (Checkland and Holwell, 1998). The validity of the models presented with these methods is more in their ability to communicate with the stakeholders and accept the employers, help create new insight and attitude, adapt to the real system, improve understanding, and influence the audience. In general, as this paper move towards soft systematic methodologies, the validity of these models depends more on the opinion of the stakeholders. Checkland believes that in soft methods, the criterion of "Recoverability" is more suitable for complex human situations than the "Repeatability" criterion, which can be obtained mostly in laboratories. Recoverability means that others can understand and retrieve the research and be aware of the work done and how to obtain the results. The criterion of recoverability is not as strong as the criterion of repeatability; instead, in complex human situations, including organizations, it is the criterion of recoverability that distinguishes Well-organized action research from storytelling (which is used in many social science types of research) (Checkland and Poulter, 2007). This article's strategy implementation model was implemented for one of the strategies in ISC, which was approved by all stakeholders. To ensure its recoverability, this article explained these steps precisely and effectively so that similar organizations can benefit from its capabilities and turn them into a native model for every organization. By using it in other fields and obtaining desired results, its recoverability will also be increased.

7. Discussion and conclusion

This paper attempted to apply Soft Systems Methodology (SSM) as one of the widely used methodologies of systems thinking in strategic management to implement strategies in the organization. In this way with applying SSM have been overcome the limitations caused by using existing methods in this domain. With the assistance of SSM and the development of a strategic operational plan for enhancing employee motivation, the gap between the strategic and operational layers in the Iranian Statistic Center (ISC) have been diminished.

As outlined, the application of SSM involved drawing a rich picture of the problem in an unstructured form. This picture was analyzed to identify the defined problematic situation within the political and cultural environment and among stakeholders. Subsequently, root definitions were derived corresponding to the CATWOE elements for each office. Additionally, the purpose of the activities model in each office was defined to align with strategic goals. Due to the clarity of the purpose and to comply with the system principles, it has been used the subject-oriented model in SSM to derive strategies in the following. The ideal model of the strategy have been drown for enhancing the motivation of employees and compared this model with what happens in the real world in the relevant department through questions such as how to carry out activities, their priority and delay, the criteria for measuring the efficiency, the effectiveness, and the efficacy. In the end, appropriate strategies, or improvement measures (such as structural, process, or cultural changes within the organization), were determined by reaching a compromise between stakeholders' opinions for implementation in relevant offices and the operational strategic plan. This plan included strategic objectives, task actions of executives, measurement indicators, and respondents, ultimately satisfying ISC employees. With these insights, the procedure was applied to other strategies within the planning department.

In general, this paper aims to demonstrate the step-by-step application of the SSM methodology within a public organization to enhance strategy implementation. The effort is directed towards advancing the utilization of this methodology in the realm of strategy and solidifying the role of systemic thinking in practical contexts. It is suggested that by doing these steps in the organization, the implementation of strategies in the organization will be helped, and researchers should increase the benefits of this method by combining this method with other methods of strategy implementation.

At the end of this point, it is necessary to mention that there are other outcomes in the domain of practice, among them organizational learning and promotion of organizational culture in the direction of strategic objectives, which cannot be mentioned in the form of a scientific article.

Disclosure statement

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References

Ackoff, R.L., 1979. The future of operational research is past. *Journal of the operational research society*, *30*, pp.93-104. http://doi.org/10.1057/jors.1979.22.

Anisarida, A.A., Janizar, S. and Prima, G.R., 2020. The Approach Of Soft Systems Methodology For System Online Management Consultant Construction. *Dinasti International Journal of Digital Business Management*, *1*(3), pp.353-360. https://doi.org/10.31933/dijdbm.v1i3.239.

Bergvall-Kåreborn, B., Mirijamdotter, A. and Basden, A., 2004. Basic principles of SSM modeling: an examination of CATWOE from a soft perspective. *Systemic Practice and Action Research*, *17*, pp.55-73.10.1023/B:SPAA.0000018903.18767.18.

Bryson, J.M., 1988. A strategic planning process for public and non-profit organizations. *Long range planning, 21*(1), pp.73-81.https://doi.org/10.1016/0024-6301(88)90061-1.

Checkland, P. and Holwell, S., 1993. Information management and organizational processes: an approach through soft systems methodology. *Information Systems Journal*, *3*(1), pp.3-16. https://doi.org/10.1111/j.1365-2575.1993.tb00111.x.

Checkland, P. and Holwell, S., 1998. Action Research: Its Nature and Validity. *Systemic Practice and Action Research, 11*, pp.9-21.https://eprints.lancs.ac.uk/id/eprint/43230David, F.R., 2011. *Strategic management concepts and cases*. Pearson. URL: http://elibrary.gci.edu.np/handle/123456789/762.

Checkland, P. and Poulter, J., 2007. *Learning for action: a short definitive account of soft systems methodology, and its use for practitioners, teachers and students*. John Wiley & Sons. https://eprints.lancs.ac.uk/id/eprint/48030.

Checkland, P., 1981. *Systems thinking*, *systems practice*. John Wiley & Sons. *New York*.

Delbridge, R., 2008. An illustrative application of soft systems methodology (SSM) in a library and information service context: process and outcome. *Library Management*, *29*(6/7), pp.538-555. https://doi.org/10.1108/01435120810894545.

Ebrahimi, M., 2022. Using soft systems methodology to corporate cultural change system analysis. *International Journal of Business and Systems Research*, *16*(4), pp.448-468.https://doi.org/10.1504/IJBSR.2022.123937.

Fadhil, R., Qanytah, Q., Hastati, D. Y., Maarif, M. S. 2018. Development Strategy for a Quality Management System of Gayo Coffee Agro-Industry Using Soft Systems Methodology, *Periodica*

Polytechnica Social and Management Sciences, *26*(2), pp.168-178. https://doi.org/10.3311/PPso.11341.

Fatemi, S. Z., Azar, A., Moghbel BaArz, A., & Khadivar, A. 2022. Exploring the Concept of Strategic Renewal with Soft System Methodology. *Strategic Management Thought*, *13*(1). SSRN: https://ssrn.com/abstract=4190622.

Françozo, R., Paucar-Caceres, A. and Belderrain, M.C.N., 2022. Combining Value-Focused thinking and soft systems methodology: A systemic framework to structure the planning process at a special educational needs school in Brazil. *Journal of the Operational Research Society*, *73*(5), pp.994-1013. https://doi.org/10.1080/01605682.2021.1880298.

French, S., 2009. Re-thinking the foundations of the strategic business process. *Journal of Management Development*, *28*(1), pp.51-76. https://doi.org/10.1108/02621710910923863.

Gurl, E., 2017. SWOT analysis: A theoretical review. http://dx.doi.org/10.17719/jisr.2017.1832.

Haines, S.G., 1998. *The manager's pocket guide to systems thinking & learning*. Human Resource Development.

Hindle, G.A., 2023. Introduction to Soft Systems Methodology. *Journal of Systems Thinking*, pp.1-13.

Ishino, Y. and Kijima, K., 2005. Project management methodology for stimulating strategic communication in Japan. Systems Research and Behavioral Science: *The Official Journal of the International Federation for Systems Research*, *22*(3), pp.209-221. https://doi.org/10.1002/sres.658.

Kaplan, R.S. and Norton, D.P., 1996. *Using the balanced scorecard as a strategic management system*. Harvard business review.

Kaplan, R.S. and Norton, D.P., 2005. *The balanced scorecard: measures that drive performance* (Vol. 70, pp. 71-79). US: Harvard Business Review.

Liu, W.B., Meng, W., Mingers, J., Tang, N. and Wang, W., 2012. Developing a performance management system using soft systems methodology: *A Chinese case study. European Journal of Operational Research*, *223*(2), pp.529-540. https://doi.org/10.1016/j.ejor.2012.06.029.

Ma, L., Liu, P., Fu, F., Li, Z. and Ni, W., 2011. Integrated energy strategy for the sustainable development of China. *Energy, 36*(2), pp.1143-1154.https://doi.org/10.1016/j.energy.2010.11.035.

Macías-Barreto, C. and Aguilar-Fernández, M., 2021. Soft Systems Methodology Applied to Design Processes in an Artisan Enterprise. *Revista Ingeniería UC*, *28*(2), pp.308-322. https://doi.org/10.54139/revinguc.v28i2.29.

Moghbel Baerz, A., Azar, Z., Jhadivar, A. and Zarezadeh, M., 2021. A Total Systems Intervention Approach to Developing Strategy Implementation Roadmap in Public Organization. *Management Research in Iran*, *19*(2), pp.1-29. [InPersian]

Mingers, J., & Rosenhead, J. 2004. Problem structuring methods in action. *European journal of operational research*, *152*(3), pp.530-554. https://doi.org/10.1016/S0377-2217(03)00056-0

Mingers, J. and White, L., 2010. A review of the recent contribution of systems thinking to operational research and management science. *European journal of operational research*, *207*(3), pp.1147-1161. https://doi.org/10.1016/j.ejor.2009.12.019

Mingers, J., 2000. An idea ahead of its time: the history and development of soft systems methodology. *Systemic Practice and Action Research*, *13*, pp.733-755.

Prewitt, J.E., Weil, R. and McClure, A.Q., 2012. A complex adaptive systems approach to strategic planning. *Asian Journal of Business and Management Sciences*, *1*(11), pp.94-99.

Rodriguez-Ulloa, R. and Paucar-Caceres, A., 2005. Soft system dynamics methodology (SSDM): combining soft systems methodology (SSM) and system dynamics (SD). *Systemic practice and action research, 18*, pp.303-334. 10.1007/s11213-005-4816-7.

Rosenhead, J. and Mingers, J., 2001. *Rational analysis for a problematic world revisited*. John Wiley & Sons. http://eprints.lse.ac.uk/id/eprint/7946Stacey, R.D., 2007. *Strategic management and organisational dynamics: The challenge of complexity to ways of thinking about organisations*. Pearson education.

Saad, N.H.M., Alias, R.A. and Rahman, A.A., 2005. Using soft-systems methodology (SSM) in formulating knowledge management systems (KMS) strategy for Malaysian public institutions of higher education. In *5 th International Conference on ICT and Higher Education* (pp. 26-29).

Stacey, R. and Mowles, C., 2016. Strategic Management and Organisational Dynamics: The challenge of complexity to ways of thinking about organisations. https://lccn.loc.gov/99038846.

Stacey, R.D., 2007. *Strategic management and organisational dynamics: The challenge of complexity to ways of thinking about organisations*. Pearson education.

Stead, J.G. and Stead, W.E., 2019. Why Porter is not enough: Economic foundations of sustainable strategic management. *Rethinking strategic management: Sustainable strategizing for positive impact*, pp.67-85. https://doi.org/10.1007/978-3-030-06014-5_4.

Sun, Q.L., 2021. Design and implementation of personnel management information system based on SSM. *Destech Trans. Econ. Bus. Manage*, *213*, pp.104-114.

Zlatanovic, D., 2015. Combining soft systems methodology and system dynamics: possibilities and limitations. *Актуальні проблеми економіки*, (1), pp.15-24.