

Game Simulation of Organizational Conflicts with Due Regard for the Type of Temperament



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Abstract The article shows the possibility and practicality of building game simulations of organizational conflicts with due regard for the type of temperament. In this case, information about the types of temperament prevailing in the team is included in the leader training procedures in the process of the simulation game. The adaptable simulation model used in the process of a business game should be functionally expanded by means of elements and connections that ensure the causality of the psychological attitude of the team and the leadership style chosen by the leader. To analyse this causality, a cognitive model of game simulation is suggested that is implemented in the course of further research in the form of a simulation model within AnyLogic simulation software. The problem of studying the influence of temperament types on the emergence and escalation of organizational conflicts is analysed on the basis of characteristics of four types of temperament (sanguineous, melancholic, choleric and phlegmatic types). The article shows the possibility of game training of a leader proceeding from psychological attitudes when choosing a management style.

Keywords Game simulation · Simulations model · Organizational conflicts · Behaviour strategies · Temperament · Leadership style

1 Introduction

It is known that modern educational game technologies allow achieving the maximum activity of students despite the increased intellectual and psychological stress during the game. Moreover, a participant in the game learning process needs to demonstrate his/her knowledge in an integrated form in the conditional practice environment, which is the most important advantage, for example, for higher professional education or professional retraining of specialists [1]. This is why the tasks of both the organizational and methodological formalisation of the game learning process and

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the construction of a variety of simulation environments adjusted to the educational tasks to be solved are so relevant [2].

Nowadays, educational game technology in the field of organizational systems—this is a class of the so-called business games—is becoming more widespread. Using computer simulators and adaptable simulation models of production processes in the toolkit for building business games makes this learning technology especially attractive. In the scientific and educational environment, there are examples of successful implementation of business games (see, for example, [3, 4]). There is a steady growth in the audience of users. There is observed the ambition of developers and teachers to expand functionality [5], focus on methodological innovations [6, 7], and finally appropriate traditional educational technologies in the new computer environment [8, 9].

Examples of the most complex combination of such ambitions include the development of the game simulation environment of organizational conflicts based on computer simulators. In the process of game simulation, a student should be able to make a forecast of the conflict escalation and make a management decision based on the assessment of the current situation, for example, relying on the choice of a leadership style corresponding to the current parameters in a specific conflict situation [10]. However, the disadvantages of the mentioned example and similar implementations of computer simulators should be noted. First of all, this is a too schematic, algorithmically unambiguous procedure for making a decision on the choice of a leadership style, avoiding behavioural uncertainties and socio-psychological personal or collective attitudes. In this paper, we propose to consider a variant of building the game simulation environment of organizational conflicts based on simulation models with due regard for the type of temperament of employees of a subordinate team.

2 Materials and Methods

It is suggested to use convergently integrated methods of the theory of management of organizational systems [11] and practical psychodiagnostics [12] as a theoretical and methodological basis for this article. The first one attracts by its strategy of describing management functions within the framework of decision-making models. At the same time, it substantiates the fundamental need to take into account the purposefulness of behaviour of participants in organizational systems [13]. The methods and tools for such accounting are given as part of the second component of integration, namely, practical psychodiagnostics. Evaluation of a stable personality characteristic, a type of temperament, and possible strategies for behaviour of a particular person or a team as a whole in a conflict in an organization forms an image of a conflict situation and should be taken into account when making a management decision. Therefore, the mutual influence of methods, their convergence are the natural foundations for building a game simulation of managing organizational conflicts.

In order to describe the obtained model solutions, it is suggested to use the methods of cognitive analysis that represent game simulation models of organizational systems

in the form of a visual topological image. Examples of the successful use of analytical tools of cognitive models for the study of educational problems have already been recognized and developed within the framework of professional education (see, for example, [14, 15]). Cognitive models provide access to the analysis of the structure of the game at the level of basic concepts, their target relationship and causal interaction, i.e. the dynamics of functioning; they also make it possible to reveal the semantic attitudes characteristic of a real conflict situation. Formally, cognitive models are already a prototype of simulation models, which predetermines the rationality of joint consideration of cognitive and simulation models. In this work, we propose to use AnyLogic simulation software to build a simulation model, which allows creating dynamic models of organizational management systems and provides ample opportunities for building a virtual educational environment with elements of game simulation and artificial intelligence [5].

3 Results

The structure of an organizational conflict includes the following basic concepts: Pre-conflict situation, Conflict, Escalation and De-escalation [10]. The cycle of initialization and escalation of a conflict is described in cognitive analysis by a single-loop model of interaction of these concepts, namely, Pre-conflict situation \rightarrow Conflict \rightarrow Escalation \rightarrow De-escalation \rightarrow Pre-conflict situation. The game environment is constructed by supplementing the cognitive model of the organizational conflict with elements of formation of a pre-conflict situation and management of the launch and escalation of the conflict. Such supplementing is intended to create the level of a conflict situation required from the point of view of training. The student's reaction to the conflict escalation is assumed in the form of a choice and assignment of a leadership style in accordance with a specific situation. The purpose of the business game within the framework of the theory of management of organizational systems [11] is to develop the leader's ability to adapt his/her leadership style for a specific conflict situation, achieving its effective overcoming [4]. For implementing the function of choosing a style in the game, the provision is made for the player to construct a leadership style that will de-escalate the conflict. Figure 1 presents the cognitive model of a business game for constructing a leadership style in a conflict situation.

First of all, attention should be paid to the initial structural and dynamic orientation of the game to counteract the conflict escalation. The game loop forms a closed loop with negative feedback, i.e. the player's choice of the leadership style should enhance the tendencies to de-escalate the conflict and defuse the pre-conflict situation. The level and rate of the conflict escalation in the cognitive model are set through the concepts of Data on conflict risk factors, Data on the level of conflict and Data on escalation rates. The combination of each of these concepts with the corresponding concept of the game cycle of the conflict (Pre-conflict situation, Conflict, Escalation) forms the nodes of integration of the causes of the conflict situation and, as a result, generates a "spin-up"—intensification of the conflict. In turn, the effective

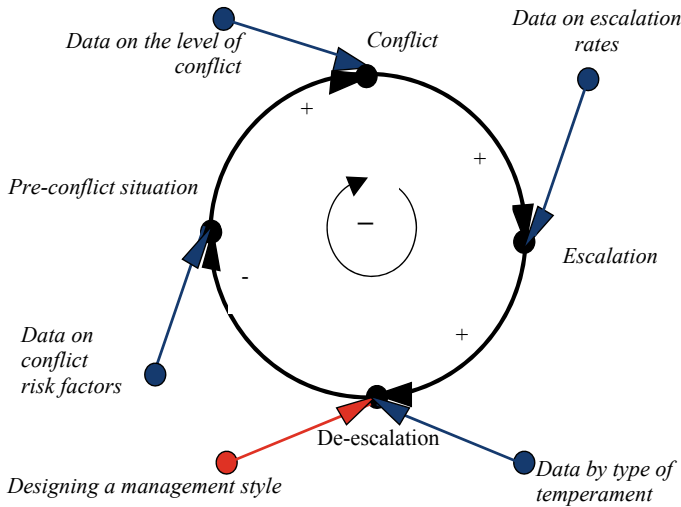


Fig. 1 The cognitive model of a business game for constructing a leadership style in a conflict situation

construction of the leadership style through its connection with the concept of De-escalation forms a resistance node where multidirectional tendencies of escalation and de-escalation of the organizational conflict are integrated.

However, this construction of the model [10] does not take into account the factors influencing implementation of the structure and dynamics of the process of de-escalation of the conflict, in particular, behavioural uncertainties and socio-psychological personal or collective attitudes. The need to build a type of business game in accordance with the specifics of a particular business is indicated, for example, in [16]. In our case, this means the need to take into account the influence of the types of employees' temperaments prevailing in the team on specific procedures for the conflict de-escalation. The De-escalation node is a more complex structure where the consequences of three directional influences are integrated, namely, the multidirectional tendencies of escalation and de-escalation of the organizational conflict already mentioned above and data on the type of temperament that can both intensify and weaken the de-escalation procedures. In this case, temperament is understood as a set of individual mental properties of a person manifested in his/her attitude to the surrounding reality, in particular, in possible behaviour in a conflict situation. Information about the prevailing types of temperaments should enable the player to design the leadership style that will most effectively counteract the organizational conflict.

To move from a cognitive model to a simulation model when forming the game simulation environment, it is necessary to expand on the structural implementation of procedures for de-escalation of organizational conflicts. In [10], it is suggested to structure the de-escalation procedures in accordance with the classical typology that distinguishes authoritarian, democratic and liberal styles. Each of the styles

corresponds to one or more de-escalation procedures that effectively promote the appropriate conflict resolution strategy, for example, from the series: cooperation, compromise, rivalry, avoidance and evasion. The specified conflict resolution procedures are based on specific strategies of behaviour. However, these strategies of behaviour, in turn, stem from the type of temperament, namely, sanguineous, melancholic, choleric and phlegmatic temperaments [17], characteristic of employees. Let us consider how a game simulation of an organizational conflict can be built taking into account two origins of setting a behaviour strategy. As in [10], we will use for construction AnyLogic simulation software which implements the cognitive model of game simulation described above in terms of system dynamics using flow diagrams and accumulators, variables and other tools [5]. The simulation model of countering the organizational conflict with due regard for the type of employees' temperament is shown in Fig. 2.

Basically, the model corresponds to the description given in [10] and includes as accumulators (analogues of concepts of the cognitive model) Pre-conflict situation, Conflict, Escalation, De-escalation. Moreover, to implement the de-escalation procedure, the model provides for the following accumulators (corresponding to one of the five recommended strategies of behaviour): Cooperation, Compromise, Rivalry, Avoidance, Evasion. The game leader sets data on the factors of conflict risk in a particular situation using the interval (0–100) setters Resource constraints, Management shortcomings, Psychological climate, Authority of the Manager and

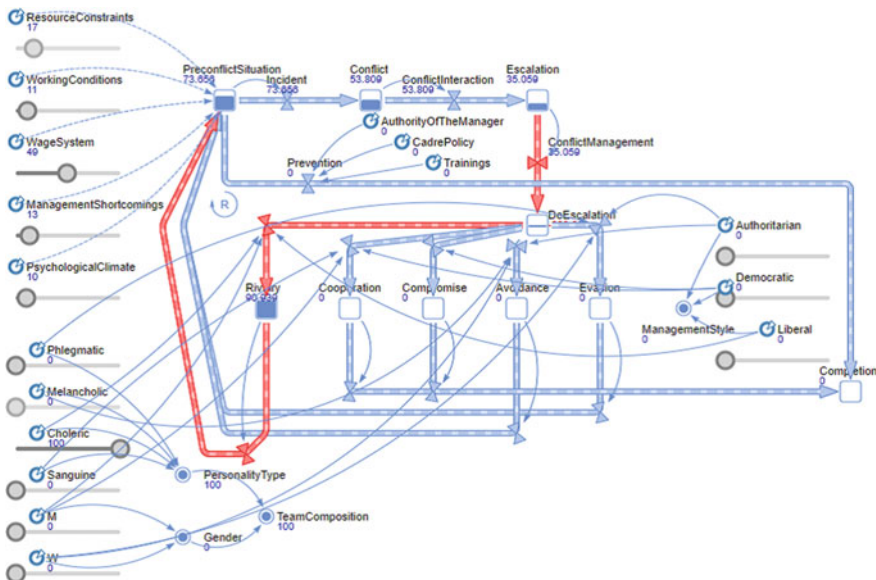


Fig. 2 The simulation model of countering the organizational conflict with due regard for the type of employees' temperament

Cadre policy. The data on the level of conflict and data on escalation rates, respectively, are determined by the flow characteristics of Incident and Conflict interaction. In contrast to the model described in [10], this one suggests implementation of the mechanism for taking into account the type of temperament. For this purpose, the game leader has the opportunity to form the characteristics of prevalence of choleric, melancholic, phlegmatic and sanguineous temperaments in the team of employees with the help of interval (0–100) setters of the Personality type family (in the future, there is a possibility to include the prevailing gender characteristics using the Team composition, Gender parameters during the game).

For a player trained using such a simulation model, the task of constructing a leadership style in a specific conflict situation becomes much more complicated. He/she needs to solve the traditional problem of constructing a style based on the entire set of initial data, i.e. not only the characteristics of the organizational conflict cycle, but the restrictions imposed on a possible solution by the preferences of employees in terms of strategies of behaviour in the conflict. For example, let us assume that choleric people predominate in the team, respectively; the Choleric slider is set to 100 by the game leader. As far as is known [17], choleric people are characterized as hot-tempered, strong, fast, expressing their feelings and emotions vividly, due to such a temperament they prefer the behaviour strategy of Rivalry in the conflict. In Fig. 2, the cycle of the organizational conflict with the behaviour strategy of Rivalry is highlighted in red. But such a strategy corresponds only to the liberal leadership style [10] (but not completely). In this case, the player must set the level of the style type of Liberal to 100 and Authoritarian, Democratic to 0 (see Fig. 2) using the interval setter. However, the choice of the liberal style can aggravate the conflict situation that is emerging in accordance with the data on the conflict risk and the escalation rate. The player finds himself/herself already in a state of an internal conflict when it is necessary to construct more complex combinations of leadership styles taking into account the revealed contradictions of the initial data.

4 Discussion

A similar situation is observed with other types of temperament. Melancholic people, in contrast to choleric people, are prone to strong and rather long emotional stress; therefore, in a conflict they prefer the strategy of Avoidance. Another type of temperament is phlegmatic. They are characterized as slow and balanced, calm and non-conflict, i.e. avoiding conflicts, hence the strategy of their behaviour is Evasion. And the last fourth type of temperament is sanguineous. Sanguineous people are similar to choleric people; they are quick and agile, with a vivid expression of feelings and emotions but less strong and quickly fading away. This temperament is characterized by the Cooperation strategy. None of the types of temperament is strictly unambiguously consistent through the strategy of behaviour with any of the leadership styles. We remind that the liberal style is based on the strategies of Rivalry and Evasion, the

authoritarian style is based on Avoidance and Evasion, the democratic style is based on Cooperation and Compromise.

It is known that it is quite rare to meet bright representatives of one or another type of temperament in real life, basically people combine traits of different types of temperament, among which one predominates and the others complement. So, in reality, there is no pure temperament type of a conflict. The situation with the predominance of some type of temperament in a team of employees looks even more complicated. A team is invariably a conglomerate, an interaction and a mutual influence of temperaments. But using a pure type of leadership style is also hard to imagine. Therefore, the game leader can offer the player an almost infinite number of options for tasks based on the variety of actually observed organizational conflicts, and the player is faced with an interesting and difficult task of constructing the most effective leadership style in the context of emerging preferences of the strategies of behaviour of employees in accordance with the type of temperament. The training process can be as close as possible to the real situation through the preliminary collection of data about the organization. Plunging into a specific conflict situation, the player is forced to leave the usual leadership style and, overcoming significant intellectual and psychological stress, construct a variable leadership style that is most consistent with reality. The leader's game experience worked out in critical conflict situations will allow avoiding a sketchy character of organizational decisions in the future and developing an ambition for a variable leadership style in the context of organizational conflicts.

The player's reaction to the initial and current situation already removes him/her from the perception of the game environment and allows him/her to evaluate his/her decisions at the level of forecasting real conflict management in the work team. In this form, the model can be used not only as a game training one but also as an advisory or forecasting one in managing and resolving workplace conflicts.

5 Conclusion

We have suggested a cognitive model of a business game for constructing a leadership style in a conflict situation. The model is a contour-nodal structure where nodal inclusions in the conflict cycle allow the game leader and the player to build game strategies taking into account the influence of the prevailing types of temperament of employees in the team on specific conflict de-escalation procedures.

A simulation model is implemented in the paradigm of system dynamics and in the notation of AnyLogic simulation software for the game-based training of a leader for counteracting the organizational conflict in the context of variability of authoritarian, democratic and liberal leadership styles. The proposed simulation model represents an organizational conflict not in the form of separate procedures with explicit causal dependencies but in the form of a dynamic system where the initial data of the conflict risk, organizational structural and psychological attitudes form a complex conflict situation with implicit integrative characteristics. This is how a new, higher level of

intelligence in the game is achieved, i.e. a fundamental withdrawal from “coaching” for primitive leadership schemes.

When simulating the game, taking into account the prevailing types of temperament in the team that influence specific procedures for de-escalating the conflict fundamentally changes the psychological environment. The player finds himself/herself in a state of internal conflict when it is necessary to construct more complex combinations of leadership styles with due regard for the revealed contradictions in the data on the conflict risk and on the preferences in the strategies of behaviour of employees in accordance with the type of temperament.

The presented simulation model is focused on the game-based training of a leader in countering organizational conflicts; however, the range of tasks solved on its basis can be significantly expanded.

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