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THE MODEL OF UNRELIABLE ELEMENTS (HUMAN RESOURCES) INTELLECTUAL MANAGEMENT SYSTEM ON THE BASIS OF THEIR PSYCHOLOGICAL AND PERSONAL CHARACTERISTICS

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Abstract: The Article suggests a possible approach to creation of the Intellectual Management System for human resources and personnel (during their professional tasks solving), and that could consider personal characteristics and psychological condition of the human resources as an “unreliable” element. The Article describes some elements of the Intellectual Management System: professional activity model and “unreliable” element (human resources) model.

Keywords: The theory of unreliable elements, The knowledge system, The intelligent control.

Introduction

Management in broad sense of word is the permanent process of influencing the object of management (person, collective, technological process, company, state) in order to achieve the optimal result within the minimal expenditures of time and resources.

Management exists for more than 7 thousands of years, it is social as it started since the appearance of the human relations. The trends of management development - methods, the attitude towards the object of management – during all the time were directed on improvement of the workers’ social environment and more subtle coordination with every person in order to consider his individual characteristics and demands. This is quite natural, because, without people, there is no organization. Without the specific people, no organization can achieve its goals and survive. And this is extremely difficult to do this without effective human resources management – one of the most crucial aspects of the Theory and Practice of Management. To make the organization function effectively, it is necessary to properly organize the staff’s working process, permanently controlling the workers’ activity, using the different methods of management.

Specific type of management activity, which object is the workers collective – personnel, was called Personnel Management (Staff Management). It is specific because in the management of people it is necessary to consider such an indefinite, unreliable thing as “human factor”.

Unreliable elements, within the context of management, are those elements that are not provided with reliable information on their real condition, their behavior can not be forecasted with the high level of probability. Unreliable elements in the Management theory are, first of all, human resources.

The achievements of new informational technologies today allow us to examine the possibility of automation of the management processes of human resources and personnel (during their professional tasks solving), which is one of the main reserves for increase the management effectiveness. Tens of years of local networks and Internet development suggested many types of technologies for organizing the communication between people and between the whole enterprises and program complexes, which could also be used in the management

context. The analysis of the existing program systems allows to conclude that the automation of the management process is seen, first of all, as the information provision of the persons who make the decisions.

In order to solve the abovementioned problems, it is proposed to work out the Collectives' Activity Management System. The basis of the system would consist of the human resources intellectual management model. The main feature of the system is that it considers the psychological characteristics of the people (human factor) in the collective, which allows to consider many situations in the work with people. Knowing the human psychology and the particular worker characteristics, you can influence the motivation of his activity, i.e. manage him in order to achieve the specified result.

On the conceptual level of designing the Unreliable Elements Management System, it is necessary to clearly define the general axiomatics of management processes description, i.e. fixation of basic theses of further research, Management System Model description.

Management System Model is the complex of conceptions of the system. It is necessary to define the basic structure elements of the Management Model. All these elements in complex should constitute a whole and non-contradictory set of models, characterizing all the basic components of the Unreliable Elements Management System.

Applying to the task of Unreliable Elements (human resources) management (during their professional tasks solving), the set of elements of the Management System Model includes:

1) the model of professional activity, defining the purposes and tasks of the activity, decisions plan, the limits and interrelation of the resources flows;
2) the model of "unreliable element" (human resources) as an object and subject of management, defining the role-based interrelations within the collective and the characteristics of Unreliable Elements;
3) Management Process model.

In the present Article we shall examine the Model of Professional Activity and the Model of "Unreliable Element" (human resources).

The Model of Professional Activity (MPA)

The purpose of working out the model of professional activity: formalizing the method of description and activity planning, describing the variety of states of current activity and its elements interrelations, formalizing the algorithm of estimating the activity effectiveness at all the stages according to determined criteria. On the basis of MPA, the System of Aggregative Representation of the Planned Business Processes is formed, as well as the description of the resources flows parameters interrelation, and the representation of the traceable parameters of the activity carrying-out, to make possible the interference of the System in order to provide the fulfillment of the decision plan by the "Unreliable Elements".

Professional Activity is the sequence of activities, starting and coming to the end, aimed at solving the tasks, pursuing definite purposes and using the corresponding resources.

The process of constructing the model of particular Professional Activity can be divided into the next procedures:

Procedure 1: Formulating the Professional Activity (PA).
Procedure 2: Planning of PA.
Procedure 3: Execution of PA.

In defining the Model of Professional Activity, it is necessary to consider the following determinative elements of this PA:

1. The purpose of the Professional Activity – the final result, outcome, production, defined in terms of inputs, quality and execution time.
2. Complexity. In order to achieve the purposes of the Professional Activity, it is necessary to solve a variety of sub-tasks. The correlations between the sub-tasks can be very complex.
3. Time limitation. The sub-tasks are starting and coming to the end. The time-based concentration of resources is needed to the realization of the sub-tasks. If it is necessary, the resources are used for the other purposes.
4. The life cycle. As new sub-tasks are realized, the need in particular resources is also subject to change. This change occurs according to definite predictable consequence.

MPA of the Management System must provide the project purposes achievement through realization of the following activities:

1) At the stage of formulating the PA:

1.1. Professional Activity planning and sub-tasks defining.
1.2. Defining the necessary resources.
2) At the stage of planning the PA:
2.1. Regulation of complexity level between the sub-tasks.
2.2. Resource distribution between the sub-tasks.
3) At the stage of realization the PA:
3.1. Selecting the control parameters for each stage realization.

The examples of the Professional Activity Model are given below:

Object: *Professional Activity*

Description: formal general representation of the current activity environment, in its framework the Management Process would be carried out.

Attributes: (critical points: *results, resources, terms*)

Object: *Sub-tasks*

Description: minimal activity unit, defined by the subject of management, which is the part of the whole Professional Activity.

Attributes: (critical points: *results, resources, terms; additional characteristics*)

Connection Function: *Strategy*

Description: represents the Professional Activity as the hierarchy of the minimal units (sub-tasks); the result of function effect is the sub-tasks hierarchy in the system, representing the relations between them. (It is recursive: fractures the sub-tasks until the lowest possible level of the hierarchy).

Definition: *Strategy (Professional Activity) → {Sub-tasks} U {Relations}*

Agreement: Professional Activity = = Σ {Sub-tasks}

Connection Function: *Purpose*

Description: defines the results of all the Professional Activity, and the results of each sub-task. The result of function effect is the variety of the output activity results, confirmed by definite document.

Definition: *Purpose (Professional Activity) → {Results}*

Agreement: {Professional Activity. Results} = = Σ {Sub-tasks. Results}

Attribute: Results

Description: definite expression of the results (of definite quality), achieved in the result of activity.

Admitted Region: *(documents, confirming the activity results availability)*

The Model of Professional Activity is closely related with the Model of Human Resources and its peculiarities.

The Model of Human Resources – the "Unreliable Element" (MOH)

The existing programmed management systems, which elements are people, have a number of peculiarities that complicate the management process. This is directly related to biological, emotional peculiarity of people (human resources), which makes them the "unreliable elements". Unreliability of human resources as the object/subject of management negatively effects the process of professional activity.

The Intellectual System should possess the knowledge about the personnel, including:

1) Information about each employee: type of behavior, professional responsibilities – for defining the methods of motivational influence and defining the types of entrusted tasks.;
2) Knowledge about the general types of human resources unreliability during the professional tasks solving – in order to implement the knowledge about justified (in this case) methods of motivational influence stored in the "Bank of Knowledge of the System of Unreliability and Motivation";
3) Responsibility, defined for each employee regarding to his sub-tasks – in order to assign human resources to the PA sub-tasks;
4) Behavior history: information about the activity and reactions of each employee on the types of motivation – in order to maintain the publicly available statistics, as the motivation instrument increasing the employee's

activity level, to provide the accounts to the administration and to define the most successful motivation methods.

The following definitions can be outlined in the Model of Human Resources:

1) Subject of Management, which provides the managing and organizational activity, makes decisions and provides the achievement of the set tasks. Subject of management is called the Managing System.
2) Object of Management, at which the management influence is directed, in order to provide system functioning and development. The Object of Management is sometimes called the Managed System.

The Management is provided by some Subject in respect to some Object (or Objects). It is accepted to consider the subjects and objects of management within the management hierarchy, because on the different levels of hierarchy the same object of management can appear to be the subject as well as the object. The Management process should always be preceded by defining the subject and object of management within the given hierarchy of their relations, and also by defining the features and peculiarities, negatively influencing the professional activity of human resources.

To work out the model, it is necessary to formalize the Managing System and the Managed System (subject and object of management) peculiarities, to define the probable "blocking" influences of the given "unreliable element" [Ryabtsev, 2006].

During the solving the tasks of management the collective, it is needed to achieve the realization of the tasks set before the employees within the proper time limits, decreasing the "unreliability". "Unreliability" should be understood as the psychological and the physical peculiarities of people, which can negatively effect the carrying out of the decisions plan.

For different types of unreliability, there are corresponding types of motivation defined in the literature on management. Table 1 shows as an example the proper motivation methods for particular events.

Unreliability	Motivation corresponding to the unreliability type
laziness	reprimand, encouragement, promotion, possibility of self-realization, possibility of participating in administration
unwillingness	reprimand, notice, compulsion, promotion, possibility of self-realization
forgetfulness	reminding
tiredness	trips to gather material for creative work
lack of knowledge	indispensable informing

Table 1. Motivation types corresponding to the unreliability types

Let us examine the Model of Human Resources as the object of management in the Intellectual Management System. This model includes:

- defining the role of each employee in the collective;
- defining the working characteristics of each person;
- defining the personal and psychological peculiarities of each person;
- defining the possible manifestation of unreliability;
- defining the proper motivation method for particular person and particular unreliability type.

The examples of the Model of Human Resources are given below:

Object: *Collective*

Description: a group of people working together at solving the professional tasks, who co-relate with each other so that each one can influence (provide managing influence to) the other one, and everyone is depending on the other one; i.e. the hierarchy of the subjects and objects of management is represented.

Attributes: *(Resources, Human Resources)*

Object: *Object (Managed System)*

Description: the Object, at which the management influence is directed, in order to provide management system functioning; it provides the tasks fulfillment and achievement of the set purposes.

Elements: *(Behavior History, Unreliability, Behavior Type, Job Description)*

Object: *Subject (Managing System)*

Description: provides the tasks planning, resources distribution, decision-making and control over the achievement of the set purposes.

Elements: *(Unreliability, Behavior History, Behavior Type, Job Description)*

Element: *Role-based Relations*

Description: relations between the subjects and objects of management model.

Admitted Region: *(manages, managed)*

Connection Function: *Responsibility*

Description: indication of the relations between the objects and the tasks carried out.

Admitted Region: (yes, no)

Definition: *Responsibility: ({task}, {object}) → {(yes, no)}*

Element: *Behavior Type*

Description: the number of individual psychological peculiarities of the object, representing it as the personality.

Admitted Region: *(high responsibility, normal responsibility, low responsibility)*

Element: *Behavior History*

Description: accumulated characteristics of the object during the life cycle of the collective activity: the successfulness of tasks fulfillment and reactions to motivation.

Admitted Region: *{(successfully, non-successfully)} U {(successfully*, non-successfully*)}*

Connection Function: *Job Responsibilities**

Description: definition of job description requirements for the object/subject, necessary for the professional activity carrying-out, by sub-tasks.

Definition:

Job Responsibilities (object) → {Job Characteristics*}*

Job Responsibilities (subject) → {Job Characteristics*}*

On the basis of MOH, the System of representing the "unreliable element" (human resources) as the subject and object of management is formed.

The knowledge about the "unreliable element" management, which is put into system, is represented as the enlargeable knowledge base. Using this knowledge, the System will make intellectual management decisions. Since the resources in the examined Intellectual System are human resources, it is necessary to take into account the human "unreliability" in the System: to formalize the human peculiarities that hamper or block the activity upon the prescribed decisions plan, to define the possible and justified motivation methods to prevent these "blocking' impacts. At the same time it is necessary to consider the peculiarities of each particular "unreliable element". Creation of the Knowledge Bases and data base, shown in Figure 1, will provide for fulfillment of these management purposes.

It is also necessary to define the algorithm, which allows to track the process of the professional activity tasks fulfillment, interfere in the process of the activity and implement the managing procedures necessary for particular case and particular "unreliable element", in order to provide the fulfillment of the decisions plan for professional activity (Subsystem B).

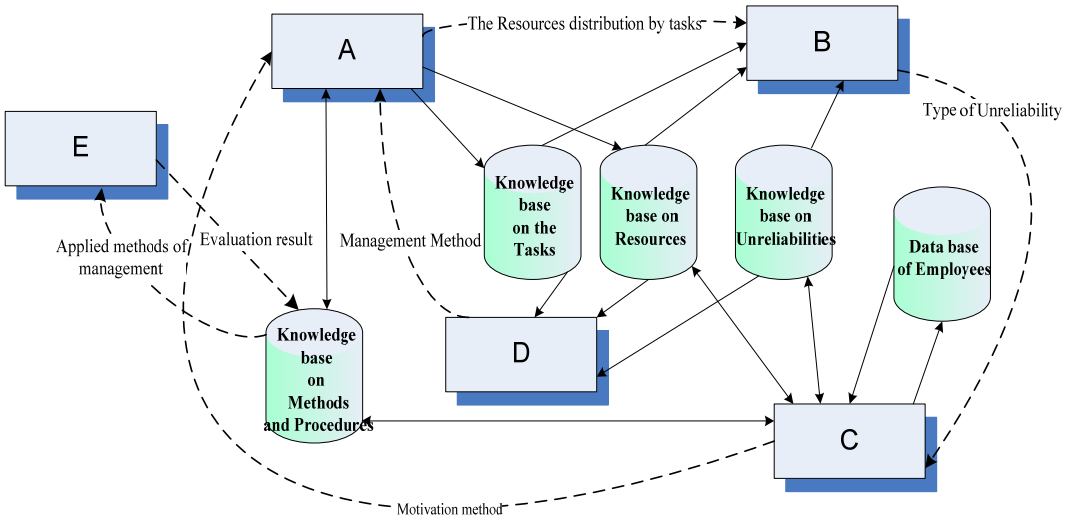
The suggested approach to the Management System designing allows to track the effectiveness of the managing procedures implementation and corresponding human resources reaction to the implemented impacts. Knowledge on effectiveness and human reactions will allow the system to provide self-training in future, thereby improving the possibilities of the System implementation during its further operation (Subsystem E).

Implementing all of the Intellectual Management System components will allow to achieve such system operating, when the human resources "unreliability" decreases during the professional tasks solving.

Thus, the conclusion could be made, that the functionality, put into the Intellectual Management System, is characterized by the influence (by implementation of particular management event – the number of management

procedures) on the “unreliable element” functioning. Such influences may cause the need of the decisions plan revising.

The main peculiarity of the Management System is that the System itself considers the psychological peculiarities of human resources (human factor) in the collective, which allows to take into account many situations in working with people.



A – Subsystem of procedures implementation on the basis of the chosen methods
B – Subsystem of plan execution and unreliabilities definition monitoring
C – Subsystem of motivation method defining
D – Subsystem of managing method defining
E – Subsystem of implemented managing methods effectiveness evaluation

Figure 1. Management System Architecture

Conclusion

The Article suggests a possible approach to creation of the Intellectual Management System that could consider personal characteristics and psychological condition of the human resources as an “unreliable” element. The Article describes the elements of the Intellectual Management System model: The Model of Professional Activity and the Model of “Unreliable” Element - Human Resources.

The programmed management systems, existing now, do not fully cover all the characteristics and peculiarities of the human resources as the object or subject of management. Thus, the problem of creating such Intellectual System, which could consider psychological peculiarities of the people as personalities during their management decision making, is urgent and practically important.

It should be noted that approach, suggested in the Article, to solving the tasks of intellectualization of people management considering their psychological peculiarities and personal characteristics, can be implemented in the problem domains, where the management system dependence on human characteristics is significant.

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