

INFORMATION MANAGEMENT IN SOCIO-ECONOMIC SYSTEMS: ETHICAL ASPECTS

Kononov D.A., Kul'ba V.V., Shubin A.N.

*Russian Academy of Sciences
Institute of Control Sciences
Tel.: (007)(095)334-90-09
Fax: (007)(095)334-89-59
E-mail: kulba@ipu.rssi.ru*

Abstract: this paper considers problems of information management ethics and any influences of information control systems on the global stability. A new formalized approach to study these problems is suggested. A range of positive and negative factors of information management is discussed. Suggested definitions allow developing of an axiomatic construction of information management concepts in social and economic systems. This article also suggests an opportunity to study an information management influence on social relations, including ethical relations from the humanization point of view on the global world tendencies of development. *Copyright © 2005 IFAC*

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1. INTRODUCTION

Under globalization of a social community and strengthening of terrorism as a problem of information management in socio economic systems recently of steel to occupy minds not only scientific and political figures of the conducting countries of the world, but also business elite.

Information management is understood as a realization of information maintenance to a mode of functioning of controlled system, which is desirable to a subject of the information management. Under globalization of a social community increasingly expanding the information space, the information, is both object, and means of influence and affecting (Kul'ba *et al.*, 1999).

The concept «the information action» (Kononov *et al.*, 2004a) is founded as a basis of research of problems of information management in socio economic systems.

The information actions in social systems are rather various. They are carried out in conditions of presence of the people having independent will. An adequate description of their behavior is a task of significant difficulty, which requires multidimensional approach to modeling.

Thus, the effective study of information management problems cannot be performed without a multidimensional analysis of relations that arise in a modern social community, precise statement of the problems and their complex decision. Especially it is impossible to bypass by attention one of major spheres of the social relations — Moral and ethical relations. As is known, the scientific approach to research of the relations specified type is formed by Ethics.

This work contains a description of a number of new results of researches in this field of knowledge.

2. THE BASIS OF RESEARCH

To start investigating of a problem it must be well defined. Let's allocate the following components of the problem:

- ethical relations as relations in a social community having property of justice;
- information management as a mechanism, a way of achievement the purposes of business;
- which information management is ethical?

A characteristic of the above components verbally consists in the following.

1.1 Ethics: a Subject & Basic Scientific Directions

Essence of an ethical question consists in search of kindness and truth (Rich, 1987). In a practical plane,

the ethical philosophical constructions are reduced in a question on validity, which in turn represents a dilemma of freedom and equality.

Within the framework of an ethical science, there were three fundamental directions:

- the descriptive ethics investigate ethical as the empirical fact;
- the normative ethics study, as owes itself to a message and why it is necessary act just so;
- the metaethics is engaged in a substantiation of the preconditions of ethical criteria of behavior.

Major for all directions of ethics still have a question on existence and applicability of the unconditional ethical requirements in the world conditional, i.e. about mutual relation of absolute and relative ethical norms (Rich, 1990).

Most serious problem of ethics is basis of its norms. One more problem is borders of ethics. The central figure of research of ethics is the man. A responsibility of the man before other man is a field of sight of an ethical science always, and before all that belongs by to sphere of human life.

There are three basic spheres of the relations:

«I» — «My own person», so-called individual aspect;

«I» — «You», so-called personal aspect;

«I/we» — «It», so-called ecological aspect.

Each of these relations can be considered from two parties: as direct and as made out by means of social institutes. The recent set of questions is studied with social ethics. The main question consists in developing such structures of social institutes regulating public life, which would not interfere, and, on the contrary, would promote solidarity of the people, favorably would influence all spheres of public life (Rich, 1990).

1.2 Ethics and Business

The ethics and business relations consider within the framework of business ethics. A definition of business ethics is given in (Cullen, 2001). The basic question, on which the attention is inverted, consists in «What are the international business ethics and social responsibility? ».

The international business ethics are unique ethical problems. Managers that conduct business actions through national borders often try to resolve these problems.

It differs from national business of business ethics by that the international business is more combined, because various cultural values and the established public systems complicate the relations between business - system and its environment.

The social responsibility is idea, that the business bears responsibility before a social community without rather to creation of the profit.

That is the social responsibility means, that the company should take into account well being of other elements business - system (for example, clients, suppliers, natives etc.) in addition to the shareholders. While business ethics usually concern ethical dilemmas, before which the managers as individuals stand, the social responsibility is usually concerned with ethical consequences of politics and procedures of the company as organization.

Is thought, these definitions not too widely cover problems of business ethics and do not allow investigating them as multidimensional (Tsyganov *et al.*, 2004).

1.3 Information management and ethics

It our opinion, that information management as mechanism of management business - system consist in realization of information maintenance to a target mode of its functioning.

The wide circulation of information management as means of influence for broad masses is sharp has forced to put ethical questions of its application in practice. There can be negative ethical consequences as a result of global application of information management (in its most aggressive forms), including

- creation of a poor in spirit atmosphere and imorality, negative relation to a cultural heritage of a nation;
- dumbness and dummyness of mass consciousness;
- manipulation with public consciousness and political orientation of social groups of the population of the country with the purpose of creation of social instability and chaos;
- destabilization of political conditions between political parties, associations and movements with the purpose of provocations of the conflicts kindling their mutual mistrust;
- reduction of a level of information support of bodies of authority and management, inspiration of the erroneous administrative decisions;
- generation of the false information for the population concerning work of state bodies, undermining their authority;
- discredit of bodies of management;
- provocation of social, political, national and religious collisions;
- initiation of strikes, mass disorders and other actions of the protest;
- by undermining the international powers of the state, cooperation with other countries;
- direct negative influence on a network of computers and automated control systems.

At the same time at effective application of information management at local, regional and global levels there can be a number of positive results from the moral - ethical point of view, including

- reduction of trade barriers;
- increase of abilities of the international e-trade;
- simplification of technological reequipment and international actions of corporation;
- mobility of the capital, information and manpower;
- acceleration of creation of an information social community;
- change both replacement of technology of management and its simplification in an environment of mass media multinational management;
- creation of common financial and information areas (common source controlled from the uniform centre);
- increase of the social responsibility of business;
- increase of interest of fine business.

How the character both result of information influence and influences can be determined? There are some other questions (Kul'ba *et al.*, 2004).

3. METHODOLOGY OF RESEARCH

To study a problem it is necessary to suggest a methodology of research.

All public processes for each social object accept the information form before to be carried out. The formalized methodology of the analysis and synthesis of effective information management taking into account the ethical factors is suggested at its realization. It assumes consideration of process of its modeling, planning and realization based on synthesis system and logical, information and logical, structural - social and scenarios of the approaches (Kononov *et al.*, 1999, 2001, 2003, 2004a).

The system and logical approach assumes construction and study of objects of research from positions of the system analysis, in which basis the concept «formal system object» is necessary. It allows studying objects and processes from the point of view of formal logic and mathematical methods.

Thus, the engineering methods (applied mathematics) for research of humanitarian problems are used. The system methodology requires a strict description of a subject domain, in which the network of observable and varied events is developed. Thus, for system $\tilde{S}(\Pi^{(S)})$ it is necessary precisely to differentiate internal system elements A_S , connected by conditions (R_S, Pr_S) , principles of their construction, and also for everyone A_S Environment, appropriate

to it, $E^{(X)}(A_S)$ at the revealed relations $R_0^{(A,X)}$ with properties $Pr_0^{(A,X)}$. The descriptions of structure and concept uniting allocated system elements and relation in system $\tilde{S}(\Pi^{(S)})$ especially should be allocated.

According to formal definitions the system $\tilde{S}(\Pi^{(S)})$ is characterized by a set of the extended states $S(\Pi^{(S)})$, formed by a rule,

$$S(\Pi^{(S)}) = \mathbf{X}(\tilde{S}) \times \mathbf{Y}(\tilde{S}),$$

where $\mathbf{X}(\tilde{S})$ defines sets of thinking environment states $\chi \in \mathbf{X}(\tilde{S})$, appropriate external conditions functioning, and $\mathbf{Y}(\tilde{S})$ is set of all sold internal states $\mathbf{v} \in \mathbf{Y}(\tilde{S})$, so $\eta = (\chi, \mathbf{v}) \in S(\Pi^{(S)})$.

According to concept $\Pi^{(S)}$ system $S(\Pi^{(S)})$ we shall enter on set $\mathbf{X}(\tilde{S}) \times \mathbf{Y}(\tilde{S})$ relation of preference $\tau^{(pref)}$: the extended condition η_1 «is more preferable than the extended condition» η_2 , if $\eta_1 \tau^{(pref)} \eta_2$. Then the basic task of a choice of a mode of functioning of system $\tilde{S}(\Pi^{(S)})$ consists in searching of the maximal elements in set $S(\Pi^{(S)})$ in sense of preference $\tau^{(pref)}$. Such mode we shall name as a target mode of system functioning.

The exact definition of formal system, used in the analysis, is given in (Kononov *et al.*, 2004a).

The information and logical approach assumes construction and study of information objects as information sets ensuring processes of functioning of given system objects. The basic concepts used at it, are the concepts «information communication», «an information field», «the information action». The association of the system and information and logical approaches allows studying procedures of formation, transformation and use of the information as formal processes of change of information condition (internal, external and extended) formal system objects. The basic concepts of the information and logical approach are given in (Kononov *et al.*, 2004b).

Structural - social approach assumes construction and study of social objects of management from the point of view of realization of kinds of human activity subjected determined hierarchy. It allows to study objects and processes in social systems on various strata of the social device of a social community, allocating the basic social objects, social structures and to describe on this basis social processes. The

association system and logical, information and logical and structural - social of approaches allows to study information influences both influences in social and economic systems, considering them as the formalized processes of change of information condition of social objects and subjects of action (Kononov *et al.*, 2004a, 2004b).

A scenario approach assumes research of information processes occurring in social systems, based on construction and study of the scenarios of behavior (the synergetic scenario) social subjects of actions and scenarios of management (the attractive scenario) social objects from positions of information and logical and structural - social of system approaches. It allows studying of multidimensional problems, to subject to the scenario analysis and to synthesize techniques of rational information behavior of the various social subjects of action, and, at the end to proceed to creation of system of information safety of the given social object, social structure or social process (Kononov *et al.*, 2004a).

The concept «the information action» allows suggesting the formalized ways of the description of strategy of behavior of the subjects of action in different situations of information interaction.

The suggested circuit allows working out a classification of kinds of information influences, classifying circumstances of realization of process of information influence. Thus, the classification of circumstances can be considered based on essential attributes, describing

- areas of stratification, in which the information management is carried out, as each of which is characterized by original ways of the description;
- the purposes of the subjects of action;
- conditions of realization of investigated processes in the field of stratification,
- used models and methods of research, which define essential conclusions about character of investigated processes.

4. PROGRAM OF RESEARCH

To investigate problems of ethics as multidimensional, we suggest the following initial verbal reason. *The problems of ethics can be considered as a problem of co-ordination: what desirable purpose, which we want to achieve, and what ways we use for this purpose.*

We think so, that any ethical norms are some restrictions or limitations, which depend on biological, social, cultural, religious, economic condition. They determine functioning of the subjects of actions in investigated business - system. Practically all of them are caused historically.

From the point of view of the system and logical approach, such restrictions on a trajectory of management can be written down as the relation or property of the relations between the subjects of action.

Examples:

- passion of Greenpeace members, resulting in a stop of nuclear stations, and subsequent freezing of the inhabitants of the Armenian republic;
- lockout of trade union of the air dispatchers;
- closing of unprofitable manufactures.

When we determine effective ethical politics of achievement of the desirable purpose, we should resolve the following problem. How we might explain our position to the participants of actions? There are many other questions.

Initial subject domain of the analysis of information management is socio economic systems. The complexity of their study is determined by presence in them of properties inherent in complex systems. A basic principle in the decision of social and economic problems of management is modeling a complete cycle of process of acceptance and performance the decisions, thus it is necessary to take into account, that

- ❖ each object is considered as a structural part (system element) more complex system;
- ❖ a role of each researched object (system element) in a common process of functioning necessarily comes to light;
- ❖ the study of the subjects of action as obligatory elements of system of models is necessary;
- ❖ the conclusions about effect of influence on researched object are formulated only after end of study of all phases of process of influence.

Study of all parts of system in their interrelation, description of process of its functioning and analysis of possible condition in the future is the basic pre-conditions of realization of effective planning, management and, at the end, improvement of real life of the people.

From the point of view of the information and logical approach the study of the ethical relations represents research of a question as far as ethically to use the information as a means and object of information management. What moral criteria we must use?

From the point of view structural - social of approach multidimensional research consists in the necessity of stratification investigated business - system in various planes means: technical, technological, economic, legal, ecological, cultural, political, social etc.

The most essential social information objects in socio economic systems are the information subjects of action: just they represent that real force, by means of which there is a preparation and realization of all

accepted and executed decisions. A ratio of influences of each information subject of action in an information field actually defines that intellectual, moral - moral and emotional atmosphere, which either renders support, or counteracts the given politics on realization of a mode of functioning of system.

To classify and construct effective scenario of information influences from the ethical point of view there follows:

- ❖ to perform a systematization of system elements in a socio economic system;
- ❖ to work out a classification of socio economic systems;
- ❖ to perform a structurization of object of influence and subject of influence;
- ❖ to allocate sets of information actions of the subjects of action;
- ❖ to allocate restrictions on «freedom of actions» of the participants;
- ❖ to develop models of an estimation of efficiency of the information actions.

According to formal definitions the allocated system element $E^{(A)}(B, r, p)$ also can be characterized by the set $SE^{(A)}(B, r, p)$ Extended condition $\eta E = (\chi E, \nu E)$, adjusting with elements of set $S(\Pi^{(S)})$. However, for concept p system element and concept $\Pi^{(S)}$ whole system apriority is not supposed and can be not executed, for example, from ethical reasons. Therefore attitudes of preference $\tau^{(pref)}(E^{(A)}(B, r, p))$ system element $(E^{(A)}(B, r, p))$ can «strongly to differ» from the common preference $\tau^{(pref)}$.

Hence, the target modes of their functioning will differ. Just the research of such differences as from the point of view of realization of internal information policy, and realization of external influences represents a major subject of the analysis of behavior of various system elements of socio economic system within the framework of research of ethical restrictions of common and individual behavior.

The attitudes between the allocated objects determine a structure of internal information influences in socio economic system. Let's allocate information structures essential at research of the ethical factors of functioning business - system (business ethics).

Organizational structures for information ensuring and supporting are determined by the attitudes of hierarchy (channels of following of information flows, actions etc.) between passive and active system elements.

Informational-industrial structures are structures of manufacture of information sets of elements of socio economic system.

Information structures of external communications are attitudes between internal and external elements described in models of object and its environment.

Informational-target structure is attitudes between concepts of the subjects of actions.

Information structures for ensuring and supporting functional system structures are structure of model of behavior of social elements (set of actions and order of their performance in organizational structures).

Information structures of interaction are attitudes between models of system elements behavior.

Information structures of measurements are attitudes concerning processes of measurements of the given and information sets (system of monitoring descriptive of ethical system).

Information structures for ensuring of making decisions are attitudes concerning processes of a choice of the alternative information decisions by the subjects of actions (model of acceptance of the decisions).

Acting with the specified structures can result in structures of a more complex kind. So, the coalitions of action represent a combine of elements belong to information structures for ensuring and supporting functional system or/and information structures of interaction. Coalitions of interests consist in set of elements which is intersection of information structures for ensuring of a making decisions and informational-target structure. There exists some others important structures to investigate ethical problems.

The social processes connect together social objects and created structures, carrying out transition of social system from one condition in another. Each of them is provided with complex compound information process requiring creation, transformation and consumption of the certain information sets («information turn over»). Its basis in socio economic system is the basic processes of information economy:

- ❖ information manufacture is process of creation of information sets;
- ❖ information distribution is process of providing of access to information resources;
- ❖ information consumption is process of use of information sets;
- ❖ information exchange is process of an exchange of information sets or their parts, i.e. transfer of information sets between the subjects of action.

The basis of effective realization of the specified processes is the property on information sets (information resources), and access to means of creation and channels of distribution of the information (information infrastructure). The property rights on information resources and infrastructure belong to the subjects of actions. They are realized by means of information structures. Basic processes of information economy can be spread out on subprocesses,

which in turn are information business - processes (information business - structure).

In socio economic systems, which require the analysis from the point of view of the ethical relations, major processes are the processes of transformation of information sets within the framework of the civil subjects of actions, in particular of concrete individual. We shall such processes unit in-group social - psychological of information processes. The course of such processes essentially depends on cultural, emotional, mental features of the person. It requires the special approach for studying.

A major system element of socio economic system is the process of information management, i.e. process of regulation of joint information actions of the social system elements ensuring the given purposes of its functioning.

From the point of view of the scenario approach the problem consists in construction of the scenario of behavior investigated business - system in various strata of an information field. The spectrum of the scenario of behavior of system constructed in each of strata should be studied. It demands using methods of the scenario analysis. Then we may synthesize the uniform effective scenario, which is taking into account given ethical norms of behavior of chosen system elements.

5. CONCLUSIONS

On our sight, the submitted analysis of information elements, ways and mechanisms of information management allow to begin modeling system of information activity in the social and economic systems which are taking place within the framework of given ethical system positions.

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