

# Management in the Knowledge Society: Tendencies and Prospects

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## Abstract

**Background/Objectives:** The purpose of this study is to investigate the possibilities and the prospects of management under the conditions of emerging knowledge society, defining fundamental management models and revealing their dynamics. **Method/Statistical Analysis:** Applying methods of social and philosophical analysis the authors study the prerequisites for modern society transformation, stipulated by the fact that knowledge is being turned into the basic factor predetermining social move to a new stage, to knowledge society. Such approach is based on the systematic method, according to which the knowledge society is treated as a complex system. Conceptual analysis of scientific studies in management and management sociology was conducted. **Findings:** It is shown that the process of moving towards the knowledge society results in appearance of a pronounced trend to abandoning the functional management principles and to developing management by objectives. This trend is expressed in decentralization of management, in abandoning the hierarchy and the administration-by-fiat management methods, in higher significance of the information component. The study justifies an assumption, according to which the increase in complexity and nonlinearity of the new organizational forms results in higher demand for adaptive management models based on applying such advanced solutions in information technologies as artificial neural networks and Artificial Life method. Due to wide-spread deployment of the network type organizations possessing complex systems of interconnections and interrelations, there is a probability of synergetic effects (fluctuations, occurrence of dissipative structures), which would require implementing nonstandard solutions in the sphere of management. Establishment and development of virtual organizational structures and virtual management processes make this trend even more pronounced. **Applications/Improvements:** Social and philosophical analysis of the principal trends and prospects for development of management in the knowledge society is not only theoretically but also practically focused and can be used by organizations/corporations interested in establishing effective management practices.

**Keywords:** Drawn from Title, 5-6 Words, Word Representing the Work, Adaptive Management, Knowledge Society, Management, Network Enterprises, Virtual Organizations

## 1. Introduction

Transition of the information society to a new stage of development, to the knowledge society<sup>1</sup>, necessitates identifying and analyzing the new factors and trends affecting the character of social management. Modern studies<sup>2-8</sup> pay greater attention to the specific features of the knowledge society as a dynamically developing structure characterized by perceiving knowledge as a factor of success in any

sphere of activity. Profound economic, socio-political and spiritual transformations in the modern world stipulate the formation of new organizational structures and, consequently, higher demand for new management systems and models. As early as in the second half of the 20<sup>th</sup> century the processes of management diversification have been taking place and its variable (flexible) systems have been acquiring wider application: customer relationship management and brand management, human resources

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management and top management, financial and banking management, business management and time management, cost and profit management, conflict management and performance management, knowledge management and information management, crisis management and quality management, etc. Management flexibility resulted from the search for managerial principles, methods and tools that might be the best for one or another system.

Development of modern information processes and creation of fundamentally new means for processing and analyzing the information flows, more important role and the increased significance of knowledge stipulate the formation of new management models, associated with establishing new organizational structures. Revealing the objective prerequisites for transition to the knowledge society and studying the role of innovations in the life of modern community the researchers consider metacapitalism to be the present economic mainstay of society<sup>9-11</sup>, which is associated with establishing large corporations organized based on network methods of business operations and the virtual forms of management, that meet the requirements of the network organizations better<sup>12-15</sup>. Traditional (administration-by-fiat) managerial models characterized by hierarchy and by the unimportant role of individual initiative are in direct contradiction to the requirements of the new types of organizations. New trends in social management are revealed in decentralization, in abandoning hierarchy and administration-by-fiat methods, in considerably more important role of individual initiative from below, in more significant role of the information component. Given the modern trends in the network organization management, associated with decentralization and diversification of operations, with the destruction of multi-level production and corporation hierarchy, it seems appropriate to identify the new tendencies in management.

A number of studies by modern researchers urge the need of developing new management models, and the conclusion is usually made that adaptive management, imitating particular features of self-organizing systems, is the one in demand now<sup>16-18</sup>. The issue of identifying the correlations between the progress of the new information technologies and the solutions for managing the super-sophisticated systems acquires urgency, as well as does the issue of establishing capabilities of the adaptive management model for managing the network type organizations, possessing quite complex systems of interconnections and interrelations. This study is focused on

analyzing artificial neuron networks and Artificial Life methods, applied for solving managerial problems; it reveals the peculiar features of virtual management. The requirements to the new type of experts, sought after by the network enterprises, have been identified together with the conditions for efficient producer-customer cooperation in network organization management.

## 2. Method

The study has been developed applying the methods of social and philosophical analysis. To clarify the meaning of the fundamental ideas, the methods of hermeneutic approach have been used. Applying the methods of systematic analysis made it possible to define the place and the role of social management and of its basic models in modern society. In studying the existing models of social management, the comparative method was applied to correlate them and to identify their specific features. The prognostic approach was aimed at identifying the prospects of modern management models, based on applying advanced IT solutions in the knowledge society.

## 3. Discussion

Rapid growth of the knowledge industry, of the new forms for its reproduction and distribution, which takes place at the turn of 20-21 centuries, leads to establishing the knowledge society. It is highlighted in the UNESCO World Report "Towards Knowledge Societies"<sup>1</sup> that the knowledge society cannot be reduced to information society, because, in the first place, the information society is based on the technological progress, while the knowledge society implies wider social, ethical and political changes. The knowledge society represents the dynamically developing structure, characterized by perceiving the role of knowledge as the factor of success in any sphere of activity. The most important economical task of the knowledge society is to produce, increase, keep, sell or share the knowledge. Moreover, this is not just about knowledge, but also about stepping up the status of scientific knowledge: establishing new organizational pattern of investigations, new way of applying the knowledge, new form of integrating science into social structures, subordinating science to the public good, changing the technological role of science.

Knowledge engaged in practical processing of resources becomes the source of value and is converted

into intellectual capital<sup>19</sup>. Intellectual capital is created as a result of interaction between human, structural and consumer capital, and it reflects intellectual resources of the organization (company). Structural capital is an intangible asset (knowledge and information) belonging to the organization, reproduced and distributed by it. Consumer capital determines the relations between the organization and the customers, the level of their satisfaction. Considering the components of intellectual capital, the economic value of human capital should be specifically noted, as it is exactly the source of renovation, manifesting itself in brainstorming, laboratory researches etc. Thus, the most important characteristic of modern economic relations is “global supremacy of corporate capital<sup>10</sup>” which leads to nonlinearity of social development. There emerges a society with network structures of social and economic life organization, which is defined by some researchers<sup>9</sup> as metacapitalism, the transition from classical business to e-business, in managing which the role of information component becomes considerably more important (electronic business-technologies). Information, knowledge and innovation become the determining resource and the basis for the efficient development of society.

Considerable transformations take place in organizational structures of the companies and corporations. Organizational forms, employing drastically new approaches to management, come to existence. Administration-by-fiat methods, hierarchical systems of interrelations, insignificant role of individual initiative directly confront the requirements of the modern society. “New paradigm of management” as the 21<sup>st</sup> century theoretical and practical approach proposed<sup>20</sup> represents the balanced short-term and long-term guidance and includes the following principal assumptions. First, management should be focused on operational results, initiated by the external environment and directed towards the external environment; they are, first of all, predetermined by the customer and not only (and not so much) by the producer, who is interested in earning profit, benefits, short-term gains from his enterprise/company. This results in the fact that the demand for management by objective and not for management by functions is the highest. Second, achieving the required result, realizing the long-term strategic tasks, related to transforming the life of society and of the human being, is not possible without well-thought-out and elaborated tactics focused on the internal organization structure, on supporting the relevant operational

activities. In this regard, the organization structure should be considered not as an end in itself, but as a tool that can help improving the efficiency of the common labor. In fact, it refers to some type of management engineering, aimed at designing social and technical medium, where an object is produced (product or service) and where it is also consumed (sold). Third, finally, this approach to management means the increased significance of managerial profession in modern society, where a manager should possess professional skills, competences and should be highly aware of his social and humanitarian responsibility before the society that selects manager as a “delegate” to fulfill professional tasks, thus placing confidence in him.

Also in high demand are the flexible (variable) management systems, decentralization, and significant role of individual initiative. Modern information technologies enable the break-through to fundamentally new forms of interrelations, where the methods of decentralized labor and management organization prevail. Among them, the organizations with internal markets should be noted, in the first place, where the general trend in managerial development is observed: from the hierarchy to organizational networks. Network as organizational form consists of local networks of the self-governed enterprises, functioning as a smooth-running market system. The basis of this system functioning is made of cooperation between different components (firms), which are united into one network structure for the period of working on this (particular) business-project and which reconfigure their networks to implement each of the projects. Specific features of managing the network enterprise are as follows:

- decentralization of large corporations and the engagement of their separate parts in the network structures;
- cooperation of small and medium-sized businesses in the network structure;
- diversification of activity;
- creating strategic alliances and partnerships with large corporations and their auxiliary networks.

The cornerstone of the network business-model is the online feedback relations between the customer and the producer. The customer becomes the central figure in the social and economic processes of the knowledge society. In mass society of the 20<sup>th</sup> century the efficiency of the productive economic activity has been, to a large degree, predetermined by the level of its ability to meet the requirements of the producer, on the one hand, and by the

level of its ability to stimulate the consumer demand, on the other hand. "Dictatorship" of the production manifested itself in the fact that it was economically more profitable for the producers to manufacture cheap and lower quality items, meeting with a ready market. Customer evaluation of the product quality ("they will buy all the same") was established in collective consciousness and was later fixed in the standards, focused on "average class", which quantitative growth should "interest" the mass society. It was believed that exactly this average class was capable of ensuring the development of mass demand for consumer goods and set some definite norms of consumption. To solve these problems, such marketing techniques as brand management and customer relations management are applied, owing to which there appears a real possibility to manipulate, to influence the people's needs, giving the producer a latent power to control them. New economic model of the knowledge society, pressed by customers and by international competition, transits to manufacturing the products dedicated to some definite consumer or customer and it can identify and satisfy the individual requirements in all their diversity. The cultural context of economics becomes a new motivation driver for innovations in organization and management structures<sup>21</sup>.

As information technologies progress, the network forms of organizational and managerial structures gradually transform into the virtual structures<sup>15</sup>. The widespread deployment of telework and freelance services entails a number of managerial problems to be solved. Thus, the lack of the direct employer control over the employee can result in excessive relaxation, disorganization and poor self-control. Incorrectly organized time management can result in physical and psychological overload. Direct communications and relations give way to virtual (indirect) ones, which lead to individual isolation, psychological isolation etc. As a result, there is a greater need for self-organization and self-control, which is manifested in self-discipline and accountability of each employee.

Propagation of network organizations and virtual management faces the problem of continuously growing complexity of the social system, which can result in synergetic effects, fluctuations, generating chaos and uncontrollability in the future. There is the need for fundamentally new forms of management, which could be met by applying the most advanced achievements of modern science, such as artificial neural networks and Artificial Life techniques<sup>22</sup>. Artificial neural networks is a tool, which makes it possible to process and analyze

the nonlinear connections in super-sophisticated systems. The models of artificial neural networks reproduce, to some extent, "organizational principles", intrinsic to the human brain. The training process includes adjusting the internal parameters of the neural network for a particular task. It is possible, with the help of the neural network, to identify the regularities existing between the input data and the predicted resulting value. Artificial neural networks, properly "trained", are capable of taking into account hundreds of conditions and thus of making decisions in multidimensional space, evaluating the importance of the parameters. Today, neural networks as expert systems are widely applied in medical science, in systems for property estimation and real estate appraisal, in training, finances etc. Given the possibilities of the Internet for online data exchange and the capability of the neural networks of processing huge amounts of information immediately, it is possible to create a new class of analytical systems. Artificial Life method simulates the process of management, which by its complexity can be compared to the self-regulating mechanisms of the living systems. The development of these systems is based on the analysis and on borrowing the basic principles from the life evolution process:

- components of the system, developing in the course of the evolution, can transfer their characteristic features by succession;
- there is a mechanism of giving birth to new generations by division, breeding or replicating the existing objects;
- the surrounding world is quite cruel and it reduces to minimum the chances for the weak and maladjusted species to survive and to give progeny;
- there is a mechanism for giving birth to new forms (similar to mutation in real world), including, as a rule, an element of randomness.

Introducing the artificial self-training system into the information system of the Internet could make it possible that it would "itself", in the process of training, select and process the required information, which would improve the "integrity of test". However, applying this kind of technique calls for applying the new forms of management as well, the most organic among which being adaptive management, that borrows the self-regulation and self-control mechanisms from a live system. C. Meyer and S. Davis identified and justified the basic tasks which



solutions would facilitate implementing management process based on the adaptive management principles<sup>16</sup>. First of all, the structure of management has to be rebuilt, stimulating the process of self-organization based on the common employees' initiative: from bottom to top. The lack of strict control calls for merits for both employer and employee, such as moral responsibility, openness to dialog, tolerance and credibility. A decisive factor of success in a super-sophisticated system is represented by its openness: the more interconnections with the environment it has, the more productive it becomes. However, the nonlinearity of such kind of systems often results in poor predictability; therefore, the mechanisms for reacting and adapting to changes in timely and precise manner should be created and trained. Providing the system with multiple selection options is an important precondition. Experimenting and creating the non-stable conditions are the prerequisites for the creative activity of the system.

Transition from the conventional organizational structures, where hierarchical relationships between people prevailed, to network enterprises means that the new type of workers is now sought after, namely, the workers possessing creative thinking, initiative, capable of self-realization<sup>3</sup>. Relies upon the idea of "self-programming labor", which reflects the requirements of today exactly. The dynamics of the knowledge society calls for special merits, associated with continuous retraining and, as it is, with "reprogramming" oneself depending on changing requirements of the fast developing environment. A new type of employees should promptly react to changing situation, rebuild their own information model with respect to the target and the tasks of the particular project, determine the direction and the need for extra training and be in good command of modern methods for changing the knowledge system. Not accidentally, therefore, there is now a competition in the modern world aimed at engaging the "self-programming labor" in a company. Managing information flows, selecting knowledge, estimating its value for solving one or another problem, ranking the problems themselves as regards the priorities in solving them, identifying the lacking knowledge and obtaining it in the course of training - all these as well as some other merits of a modern specialist is a key factor for converting knowledge into value. Hence, it would, probably, be wise to agree with an opinion of<sup>23</sup> a sociologist, who believes that the dominant position in the knowledge society is occupied not by intellectuals ("intellectual workers", "symbolic analysts", "professionals and process engineers"), but by the creative class which

earns money by designing and creating something new, and which does it with greater degree of autonomy and flexibility, as compared to other classes. Creative ethos penetrates in all strata of society, which indicates eliminating the difference between intellectual work (done by those making decisions) and physical work (done by those following the directions). As a result, not just knowledge but creativity, as the ability to create new practical forms (innovations) based on the obtained knowledge, should be regarded as the major resource ensuring functioning and development of the society.

## 4. Conclusion

The investigation proved that the new stage of information society development, called "the knowledge society", sets new requirements for management, which can include decentralization, abandoning hierarchy, rejecting the use of administration-by-fiat methods, considerably more important role of individual initiative from below. With respect to widespread deployment of the network type organizations, having quite complex systems of interrelations, the nonlinearity of economic and social operating processes in organizations increases, the probability of spontaneous fluctuations in the complex systems becomes higher. Virtual management with its basic models has gained wide application. The advantage of such kind of models is represented by their adaptive character, which helps taking into account the dynamics of the environment. The new types of workers are now sought after (creative class), who possess universal education, who are creatively active and flexible in making decisions.

## 5. Acknowledgments

The authors extend special appreciation to their colleagues Olga Vladimirovna Malyukova and Boris Ivanovich Skorodumov for their helpful comments and critical remarks in working on this study.

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