

# Viral Management as a New Type of Enterprise Management in Coal Industry

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**Abstract.** The article considers the evolution of the concept of “management”. The Internet analysis of the concept of “viral management” was conducted, the results of which testify to the positive trend, the growing interest in scientific circles, the relevance of the chosen direction for further research and the increasing popularity of the viral management among business leaders. The indices of coal and brown coal extraction in Ukraine and Russia for 2010-2016 are analyzed. Among the problems that exist in the coal industry are the following: mine assets have a high degree of deterioration; the equipment is rather obsolete and does not correspond to the world level; among the existing face equipment, the specific weight of longwall mining equipment, road headers, loading machines, and belt conveyors of the new generation is only several percent. Five steps of introduction of the virus management at the enterprise are identified: opening, development, participation, diffusion, sustainability. The principles of introduction of the viral management in the enterprises of the coal industry are offered. It is established that the main idea of the viral management is to “infect” the organization and, mainly, employees with one or another “virus” in the form of a common idea or goal. It is indicated that the viral management assumes a certain automaticity of changes, internal “obsession” with this or other innovation, involvement of an informal personal factor.

## 1 Introduction

In modern economic, political, social, and other conditions for the functioning of an enterprises, managers should respond extremely quickly to all changes that occur in the external and internal environment. Often the further activity of the enterprise depends on the speed of reaction. In the 21-st century, most enterprises whether they are big, medium or small, including operations in the coal industry, have already tried everything to improve their activity, including restructuring, reengineering, reorientation, redesigning, and yet again the above techniques do not work as efficiently as we would like. One of the alternatives and a new turn would be behavioral changes embodied in the emergence

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of the viral management that may provide conditions for sustainable large-scale behavioral and cultural changes. Of course, this may require changes in structures and processes, but the final real changes will be behavioral ones. Cultural transformations are formed by the behavior of separate people and small groups, and not from the management downwards. Changing and mobilization of people are the effects of stretching, social infection, social movement, mechanism of leadership at the low level, and support from the performers, and otherwise. For this, we need the viral management, i.e. infection with a common single idea.

## 2 Materials and methods

The development of management practices leads to a corresponding change in the development of management theory. Humanization of management increasingly shifts attention from technological management to the management of human behavior at the enterprise. At the same time, the development of the theory in its turn affects the practice of management. Thus, rational management requires a rational vision and understanding, both theory and practices of management. In turn, the modern development of management in Ukraine and Russia is influenced by the transition from the traditional management to a modern one.

A feature of the modern management is that its main function is entrepreneurial. Entrepreneurship turns into the core of management. Successful entrepreneurial activity is impossible if the enterprise does not introduce innovations. The state of economic matters in the country can be improved by improving the management and introducing its latest achievements into practice. New realities of the modern management need to be implemented as soon as possible.

Table 1 presents the approaches to the notion ‘management’ by various scientists [1,2,3,4,5,6,7,8].

**Table 1** Evolution of the concept of “management”.

N/n	Year	Definition's author	“Management” concept definition
1.	2001	A. G. Ivashenko	Effective use and coordination of resources such as assets, buildings, materials and labor to achieve specified goals with maximum efficiency.
2.	2003	G. Ya. Goldshtein	Influence of one person or group of persons on other persons for inducing actions corresponding to the achievement of the set goals in assuming responsibility for impact efficiency.
3.	2003	V. P. Sladkevitch, A. D. Chernyav'skiy	The integration process through which professionally trained managers form and manage organizations by setting goals and developing ways to achieve them.
4.	2004	I. D. Ladanov	The process of managing an individual worker, a working group, working collectives, is also a process of achieving the goal of organization by the hands of others.
5.	2005	N. V. Komarova	On the one hand, it is activities aimed at planning, organization and effective use of material, labor, financial and information resources; and on the other hand, a set of principles, methods and forms of

			management used to improve the efficiency of the organization performance and increase profit.
6.	2005	V. I. Rudenko	Ability to achieve goals, use labor, intelligence, motives of other people's behavior. Function, the type of activity in managing people in a wide range of organizations. It is also an area of human knowledge helping to carry out this function.
7.	2008	I. P. Derev'yago	An independent type of activity which requires a subject – professional - manager, whose work is aimed at the object - the functioning of the organization as a whole or its specific sphere. The function of management, i.e. the type of activity for the management of people of any branch of the economy and in any field of activity, if it is aimed at making a profit.
8.	2008	V. M. Didenko	A set of certain organizational and economic methods of managing all stages and types of adequate processes and phenomena at the level of various economic entities.

If we consider the concept of "virus", then we should turn to the definition from the biological sciences, where the virus is a non-cellular form of life, which can only be distinguished by an electron microscope. These are intracellular parasites. Outside the cell, they do not show their properties and have a crystalline form.

If we consider a computer virus, it is a type of malicious software that can create copies of itself and be embedded in the code of other programs, system memory areas, boot sectors, and distribute copies of itself across various communication channels [9].

The main purpose of the virus is its distribution, and the violation of the operation of software and hardware packages such as deletion of files, disabling of data placement structures, blocking of users' work, etc. is often its related function. Even if the author of the virus has not programmed malicious effects, the virus can lead to computer crashes due to errors, unaccounted intricacies of interaction with the operating system and other programs. In addition, viruses tend to take up space on storage devices and consume the system resources [9].

Thus, by combining these two concepts, a new "viral management" is formed. The main idea is to "infect" the organization and, mainly, employees with one or another "virus" in the form of a common idea or goal. For example, it is possible to "infect" with the idea of achieving "over-result" by a certain indicator or the idea of creating a corporation as a united, friendly "family", etc. It should be noted that viral management presupposes a certain automaticity of changes, internal "obsession" with this or that innovation, involvement of an informal personal factor. And the main task is to ensure that the "virus" introduced into the organization is ultimately beneficial, not harmful, so that, after "overcoming the virus", the organization become stronger, more powerful, more effective.

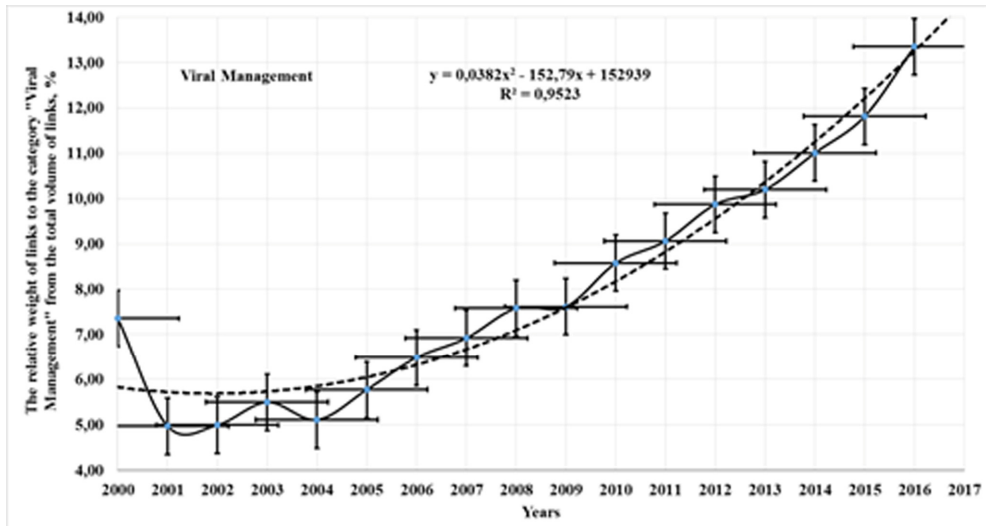
The popularization of the concept of "viral management" is proposed to be proved using the Internet-analysis method [14]. This study determines the proportion of links on the Internet to the definition of "viral management" and "social responsibility of the enterprise" in the period from 2000 to 2016. (Table 2). The data are obtained experimentally and then standardized for better visualization and comparison [15].

**Table 2** Proportion of links to the 'viral management' definition in the total amount of links (2000-2013), %.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
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<b>“Viral management” definition</b>	7,36	4,97	4,99	5,49	5,11	5,77	6,48	6,92	7,58
<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	
<b>“Viral management” definition</b>	7,62	8,58	9,06	9,87	10,20	11,01	11,82	13,35	

The forecast of the popularity of the definition “viral management” in 2017 is made (Fig. 1).



**Fig. 1.** Forecast of the proportion of links to the “viral management” definition (2-nd order polynomial), %.

The accuracy of the approximation is  $> 0.95$ , this confirms a reliable forecast for further increase in the popularity of viral management among business leaders and indicates the feasibility of new research in this area. In 2017, it is planned to increase the proportion of links on the Internet to 15% or more.

Concerning this study, the forecasting of the demand for the study of viral management was carried out based on the method of Internet analysis. So, according to the studies, we can conclude that over the past 16 years the popularity of the concept of "viral management" has grown (Figure 1). This indicates a positive trend, a growing interest in the scientific community, the relevance of the chosen direction for further research and an increasing popularity of viral management among business leaders.

### 3 Results and discussion

The coal industry is one of the basic for the economy of Ukraine. The work of adjacent basic industries – power engineering and metallurgy as well as the provision of fuel and energy to the domestic sector of the country depends on its stability. The coal industry undergoes restructuring which is driven both by the general processes of the economic transformation of Ukraine and its entry into the world economic space, and by the crisis developments that have been growing in the Ukrainian coal industry in recent years (Table 3).

**Table 3.** Indices of bituminous and brown coal extraction in Ukraine and Russia for 2010-2016 (in per cent to the corresponding period of the previous year)\*.

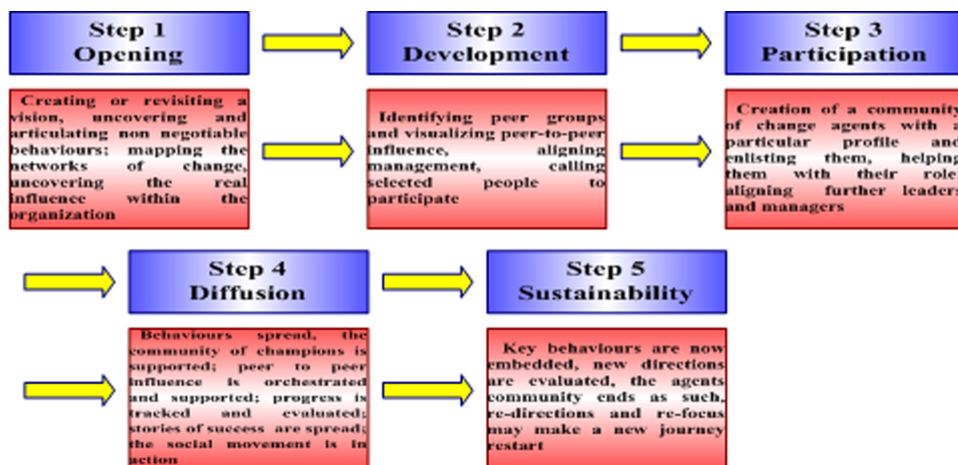
Year	Production of bituminous and brown coals	
	Ukraine	Russia
2010	99,3	106,9
2011	113,7	104,1
2012	104,5	105,3
2013	97,6	99,3
2014	69,5	101,7
2015	61,9	104,2
2016	104,8	103,2

\*compiled by the authors on the basis of statistics [10, 11, 12]

Among the problems that exist the following can be highlighted: mine assets have a high degree of wear; the equipment is rather obsolete and does not correspond to the world level; among the existing face equipment, the specific weight of longwall mining equipment, road headers, loading machines, and belt conveyors of the new generation is only several percent.

To solve these problems, scientists believe it is necessary to accelerate decommissioning, mainly through the conservation of the most unprofitable low capacity mines, that require large subsidies which allow us to improve social protection of released workers (for example, early retirement, retraining, etc.); continue to initiate with appropriate information and advertising support and carry out denationalization (privatization, lease and concession) of mines to promote the practice of joint development of coal deposits by public and private enterprises [13].

The authors consider that it is necessary to apply more innovative approaches to solving the emerging problems at the level of small, medium, large enterprises, incl. in coal industry. One such approach is viral management, consisting of 5 steps, the passage of which will not only involve all the proposed standard solutions to emerging problems in the correct sequence, but also identify new ones that improve the ultimate effectiveness of the actions undertaken (Fig. 2).



**Fig. 2.** Five steps of introduction of the virus management at the enterprise were identified \*the authors' development.

Upon study of the proposed steps, it is clear that the change in the process / system occurs through a change in the behavior of workers. Changes must come from above and be filtered, while serious changes require serious actions. Viral management provides a new basis for changes and shows how the combination of the right language and framework, a small set of necessary actions (distributed by a small number of champions) and the creation of "turning points" creates long-term cultural changes at the enterprise. Unlike conventional methods of change management, viral management can work faster, more effectively increasing organizational effectiveness in everyday organizational life (not only during change initiatives).

## 4 Conclusions

Thus, the viral management can be called a new field of enterprise management, based on changing employees' behavior, infecting them with a new idea aiming at bringing the enterprise to the desired result. The basic principles of introducing the viral management in an enterprise include: an organization or an enterprise as a single "organism"; multicenter changes and distributed leadership; lateral influence is more important than hierarchical, when it comes to culture; focus on the behavior and behavioral DNA of the enterprise are necessary to support new processes; infection of ideas and behavior; social movement; activism: "I'm doing" .... ", "But what about you?"; correctly designed informality; be more silent, act more often invisible (act > speak); "The butterfly effect": small changes are multiplied a thousand times by the community of champions; Internal leadership engine (champions) support the whole team. Thus, the viral management can become an effective alternative to the old traditional "change management" in enterprises of any field of activity, including the coal industry.

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