

MANAGEMENT OF WEAK SIGNALS IN PUBLIC ADMINISTRATION

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Abstract: *In 1975, through the efforts of the renowned researcher I. Ansoff, the formula of management by weak signals was introduced into scientific circulation, expressing a feature of corporate management that experiences difficulties in predicting the accuracy of changes occurring in conditions of increasing speed of changes in the business environment and responding to them. In addition to the speed of changes, the ability to respond may also be influenced by the uncertainty of incoming information and the lack of receptors in the receiving system that allow it to adequately perceive incoming information. The entry of global civilization into the 2020s era of instability and global threats has brought the problem of making state decisions under conditions of limited and distorted information to the forefront. The state's signaling system is formed in a mode of aligning the actions of governmental authorities with the real expectations of citizens based on an assessment of the feasibility of the efforts it undertakes aimed at improving people's quality of life. The purpose of the article is to identify the prospects for using the concept of weak signals in public administration and its use in the analysis of national government systems. As a research method, the article uses the analysis of the practice of response by the state authorities of the subjects of the Russian Federation to crisis phenomena. The result of the study may be proposals for improving the signaling system in the field of public administration, recommendations for strengthening signals and their organization.*

Key words: *weak signals, signaling system, new public management, strategic management, socially significant decisions, public administration, government authorities, global threats*

JEL classification: *D78, D81, H73*

1. INTRODUCTION

The world's entry into the digital age at the beginning of the 21st century coincided with a sharp deterioration in international relations and the emergence of troubling geopolitical challenges for all of global civilization. Information plays a special role in this process, encompassing all areas of public life and becoming a crucial factor in key political decision-making. The well-being, stability, and governance of society depend on how organized this information is and how well it is integrated into the system of social institutions.

A significant portion of this information comes from regulatory, legal, and administrative documents designed to guide socioeconomic and political processes within established institutional frameworks. For state and municipal authorities, these documents constitute a kind of signaling system, which ensures the validity and balance of administrative decisions. However, the perception of the information received by public authorities is uneven, due to the presence of so-called weak signals in the structure of the signaling system, as discussed in the works of modern scholars (Zhao, Tang & He. 2024).

Signal weakness leads to inadequate responses from those responsible for making socially significant decisions. This is caused by turbulence in the information field, driven by the rapid spread of global threats, mistrust of information disseminated during crises, and declining trust in government authorities and institutions. A methodology for responding to the impact of weak signals allows for improved management decision-making in the context of the transformation of social institutions, their declining authority, and the emergence of excessive information, which contribute to a decline in interest in traditional means of accumulating social regulators. These regulators, embodied in an information resource,

serve as a public policy tool for improving the quality of public administration, fostering intensive information exchange between levels of government, and enhancing the role of public initiatives in public administration.

2. THE GENESIS OF THE WEAK SIGNALS CONCEPT IN PUBLIC ADMINISTRATION

In 1975, the renowned researcher I. Ansoff introduced the weak signal management formula into scientific circulation. It captures the challenge corporate management faces in accurately predicting and responding to changes occurring in the increasingly rapid pace of change in the business environment. In addition to the speed of change, the ability to respond can also be affected by the uncertainty of incoming information and the lack of receptors in the perception system that would allow for adequate processing of incoming information. According to I. Ansoff, convincing decision-makers to embrace the weak signal concept means getting them to listen and detect signs of approaching threats or new opportunities. (Ansoff, 1989, p. 236)

The concept of New Public Management (NPM) contributed to the transferring of certain sections of strategic management theory from the business sphere to public administration. NPM differed from traditional public management primarily in its emphasis on management rather than execution, its encouragement of government structures to use markets and market-like competition to fulfill their core missions, and its treatment of the public as clients. (Rosenbloom, Kravchuk, Clerkin, 2022, pp. 23-24).

The field of weak signal management in public administration involved the development of scientific methods designed to organize information incoming to government authorities, differentiate it according to the potential for most effective processing, and, ultimately, propose measures for making socially significant decisions. Information redundancy is becoming an integral feature of the modern knowledge economy and is reflected in the increasingly complex circumstances of decision-making, despite the saturation of the information field with big data (Kamolov, Alekseev&Devyatova, 2026). Therefore, an adequate management approach in the information-rich environment of the knowledge economy is a shift from reactivity to proactiveness, where managing information entering the social system serves as an active tool for improving the quality of public administration.

The development of data processing and presentation methods can be carried out using various approaches, including evolutionary,

functional, and behavioral. An evolutionary approach to increasing the informativeness of signals allows for the use of historical information that reproduces the chain of cause-and-effect relationships in the development of the controlled object. The functional approach divides information into functional blocks that establish unrelated processing methods. However, the behavioral approach appears to be the most adequate for perceiving weak signals, as it allows for consideration of the multivariate nature of the controlled object's response and its instability in the face of government incentives. The use of the behavioral approach presupposes the existence of a signaling system characterized by significant diversity in how it is perceived by decision-makers. The behavioral approach allows for the use of the stimulus-response relationship in studying the signaling system of public administration. It is the signaling nature of the public administration system that shapes programmatic management methods, manifested in the development of a certain order in the implementation of strategic goals, their monitoring, and the targeted influence on the policies of leading industries and enterprises.

3. SIGNALING SYSTEM IN PUBLIC ADMINISTRATION

A signaling system in public management displays information about socioeconomic processes and the state of social spheres, presented in official documents. Therefore, it only partially represents the real picture, relying on primary methods of processing incoming information. A characteristic feature of a signaling system is the unevenness in the activity of the signals it contains, and during the process of displaying them, the perceiving subject (recipient) cannot determine which signal is significant. The signals contained in the signaling system have varying degrees of intensity, which leads to different reactions from the recipient. The recipient is the consumer of socially significant information used for administrative decision-making. Therefore, recipients can be entities of social programming—state or municipal government authorities, industry associations, and strategically oriented companies.

The state's signaling system is formed by aligning the actions of government authorities with the actual expectations of citizens, based on an assessment of the feasibility of their efforts to improve people's quality of life. The state's signaling system must be characterized by adequacy, comprehensiveness, technological effectiveness, and other useful properties. The positive impact of a signal, manifested in its intensity, lies in the response to it in accordance with its inherent properties.

During the signaling process, the recipient seeks to structure the information coming from the signaling system, giving it a specific form that allows it to be used for decision-making. The more structured the information and the greater the impact of the signal, the more confident the recipient will be in making a decision. One method of structuring information is information hierarchization, which involves dividing information content according to various criteria defined by the recipient based on their preferences.

Public demand is the basis for the public governance signaling system. This demand emerges through the public's raising of issues within a specific territorial zone. The size of this territorial zone corresponds to the scale of the issues raised by the community, commensurate with the feasibility of their solution. The less the community's ability to resolve the issue within its own resources, the greater the impact of this demand. By seeking support from government bodies, the community builds a specific system of relationships with them. However, the transmission of this signal from the community to the government authorities may be subject to disruptions and confusion.

4. MANAGEMENT OF WEAK SIGNALS IN PUBLIC ADMINISTRATION

Depending on the clarity and structuredness of public demand, all signals can be divided according to the degree of their expression. Thus, as in the business sphere, in the public administration system, strong and weak signals can be distinguished. Strong signals have obvious, vividly expressed forms of manifestation, they are based on transparent and already established schemes of state participation in solving relevant social problems. The content of these signals is mainly embodied in legislative documents, judicial orders, etc. Strong signals define stable and standard forms of activity for individuals and social groups through sanctioned prescription. Anything that is not subject to sanctioned prescriptions is a product of the free will of subjects, whose actions rely on a set of strict conditions that constitute the sole choice conditioned by the prevailing conditions. In this case, measures must be taken to select alternative solutions on the part of the recipient, possibly through more flexible signal processing methods that allow for variability and functional diversity in the decisions made. The object of such processing are weak signals.

Weak signals are formed in the ongoing interaction between government authorities and the civil community. For government authorities, they appear to be poorly informative, vague, and

requiring additional explanations. There is no clearly defined institution behind the information contained in these signals, and therefore the perception of this signal can allow the widest range of interpretations – from ignoring to active assistance. Uncertainty in assessing incoming information and the vagueness of the direction of public preferences force the authorities to find various ways to identify and select relevant preferences, to develop priorities based on which administrative decisions are prepared. Weak signals either do not reach the recipient or are distorted beyond recognition.

Processing weak signals and their analysis can contribute to synchronizing organizational decision-making with changing external circumstances in real time, becoming advanced indicators that precede significant single events and/or new changes in the pace and direction of trends (Mendonça, Cardoso & Caraça, 2012)

The main forms of working with weak signals in PA are: amplification, blocking, rectification, and ignoring. Amplification is the primary form of working with weak signals, allowing for maximum use of the information resource to ensure conditions for the practical implementation of an administrative decision. A signal can be amplified in the following ways:

- giving it the status of a norm;
- developing a strict procedure for responding to the signal;
- assigning a common meaning to the content of the signal for everyone;
- using similar signals as a model for the incoming signal.

One of the key problems in managing a weak signal is carrying out the procedure of its decoding, which can lead to its distortion. Distortion can occur, first of all, due to the diffuseness (blur) of the communication network, and, secondly, due to the uncertainty of public interest.

Currently, foresight technologies make it possible to overcome the problems of uncertainty in strategic planning. In the scientific literature, the use of the concept of weak market signals in foresight forecasts is proposed, and methods are suggested for identifying the most significant weak market signals for business units. (Weissman, Nikiforova & Nosova, 2019; Schoemaker & Day, 2009; Gribkova, 2025). The feasibility of using foresight technologies in public administration is dictated by the need to establish closer connections between science and management, creating conditions for generating more accurate and

reliable information that forms the basis for making administrative decisions. Foresight technologies allow for determining the most justified and socially significant goals in the development of social systems and for linking them to stages of achievement that are balanced in terms of time and resources.

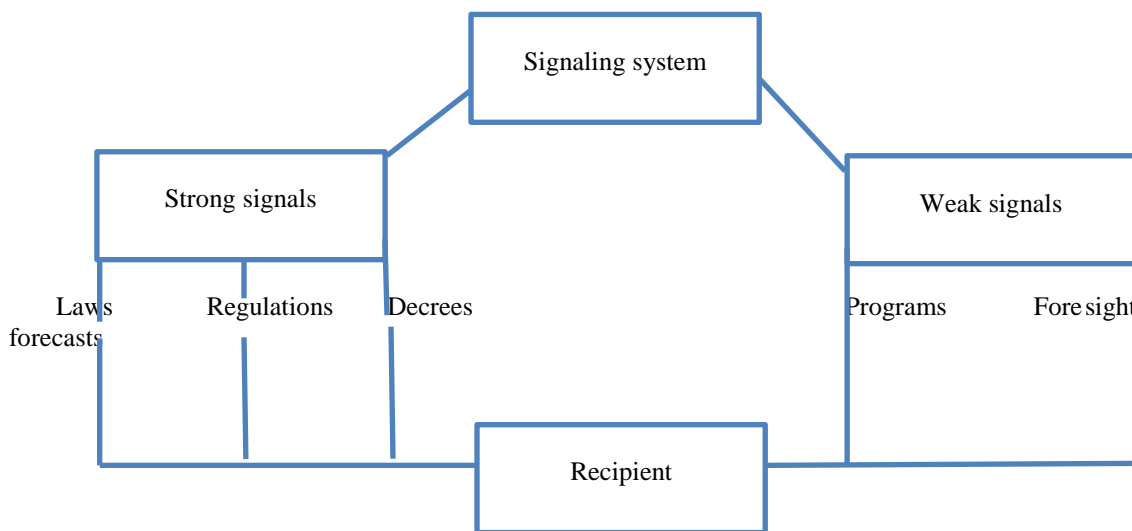
One of the main features of foresight technology is the coordination of the particular interests of various layers of civil society. (Tretyak & Kozlov, 2012). The technology provides for a procedure for citizen participation in the preparation and implementation of administrative decisions, which is possible on the condition of a comprehensive elaboration of the signals underlying the decision, and their coordinated understanding by the parties involved in the implementation processes.

Another way to strengthen signals is through the use of state and municipal programs (public programs), whose main purpose is to link the objectives stated in the programs, available resources, intermediate and final results, as well as

the timelines for achieving them. Public programs, unlike legislative provisions, are not mandatory for market participants and therefore have a lower degree of informational influence. They are created to involve a wide range of budgetary and extrabudgetary organizations in the processes of addressing priority state tasks. Public programs disclose the conditions for attracting budgetary resources and forms of participation of market entities in achieving program objectives. The implementation of a public program assumes a certain evaluation system, on the basis of which the degree of achievement of the program's goals is assessed in relation to the stated results. (Langbein, 2014).

The combination of strong and weak signals constitutes the content of the signaling system, in relation to which the authorities develop response measures to emerging challenges and ways to strengthen weak signals (Figure 1). The purpose of these measures is to form an optimal information base for making administrative decisions

Figure 1. The structure of the signalling system



Source: Compiled by the author

Thus, the use of modern forms of programming and forecasting becomes a notable feature of the modern public administration system. (Kettl, 2015).

The system of state governance is, on the one hand, preventive in nature, specializing in the formation of precautionary measures that ensure the stability and security of social communities. On the other hand, it is reactive, acting as an instrument of influence on processes that have already occurred. In the first case, the results of state governance may not be apparent, despite a fairly high level of expenditure on the operations

accompanying this activity. In the second case, the question of the state's response to a particular event arises in terms of the adequacy of this response to the stimuli generated. Moreover, the connection between the stimuli and the reaction of state institutions to their manifestation can vary and depends on the characteristics of the conditional signaling system formed within the environment of state governance.

The task of developing an information system based on monitoring a large amount of information coming both from outside and from within a functioning organizational system becomes

completely realistic. The goal of this system can be to capture weak signals — harbingers of a crisis situation, identify potential threats, and draw the attention of management for the timely making of necessary decisions (Agayan, Grigorya & Shikin, 2016).

5. THE SYSTEM OF STATE GOVERNANCE IN RUSSIA UNDER CONDITIONS OF UNCERTAINTY AND GEOPOLITICAL RISKS

The entry of the global community into a period of continuous conflicts and weakening of international law institutions has contributed to increased uncertainty and instability in the state governance systems of many countries. While national governments previously sought to rely on internationally recognized norms and rules, building their actions with a long-term perspective, in recent years they have been forced to focus on a strategy of short-term responses to spontaneous threats and risks. The exponentially growing national security risks have led to the removal of significant blocks of socially important information from the media space and force the government authorities of many countries to conduct socio-economic policy in emergency mode. Uncertainty and geopolitical risks lead to a decrease in the actualization of programmatic principles and foresight technologies as a tool.

The foundation of a modern state's signaling system is its legislation. In Russia, the legislative framework is formed at two levels—federal (the Russian Federation) and regional (federal subject), where executive authorities translate its regulations into administrative decisions. The actions of participants in the country's socioeconomic and political system are influenced by signals interpreted by public authorities, who expect these actions to be carried out in a prescribed manner. However, the intensity of these signals' influence on these actions is weakened by a number of circumstances:

1. In accordance with the Constitution of the Russian Federation, a significant number of regulations are determined within the shared jurisdiction of the federal and regional levels, which creates uncertainty regarding the targeting of signals.
2. A significant portion of signals from federal government authorities are not supported by incentives that ensure an adequate response to incoming signals.
3. A significant portion of incoming signals have a considerable lag in their impact, which slows the recipient's response to

the signal and hinders their ability to respond promptly.

4. The signalling system of the state takes on a self-reinforcing nature and can lose contact with the recipient, working to reproduce excessive and irrelevant information.
5. The recipient in an unpredictable and unstable environment turns from a dispatcher into an attribute of the signaling system itself, serving it as a whole and self-sufficient mechanism. Therefore, the recipient's decisions begin to work for the signaling system itself rather than its public use.

The system of public administration in Russia is distinguished by a high degree of centralization. This is manifested in the dominance of government authorities in the process of making socially significant decisions and the concentration of information resources in the hands of federal structures. The country's signaling system is characterized by functional fragmentation and low informational mobility, which does not allow information to be disseminated promptly in communication networks. The underdevelopment of municipal statistics and the closed nature of departmental information do not allow for a full assessment of the appropriateness and consequences of administrative decisions. Perception of strong signals at the municipal level occurs mainly through the system of legislative prescriptions, whose role in assessing and regulating socio-economic processes remains limited. In the practice of municipal management, it is necessary to solve a large number of issues that are not regulated by either federal or regional legislation. The abundance of weak signals at the lower levels of public administration expands the possibilities for their interpretation, which contributes to their non-implementation and corruption risks.

A possible way to strengthen weak signals and increase the dissemination of information is the institutionalization of public initiatives, which involves creating a municipal signaling system capable of conveying the meaning of signals to the primary recipient responsible for addressing priority issues at the level of individual settlements. The ability of local self-government authorities to make decisions in an operational mode under conditions of uncertainty and risks, and to form an open and transparent communication system, should become a crucial competence of local authorities. The main directions in the formation of such a system may include: actively involving citizens in the

development of program documents at the local level; opening educational programs aimed at training so-called municipal managers; developing concepts for the development of key areas of public life with representatives of business, etc.

CONCLUSION

The conducted analysis allows us to conclude that the problem of weak signal management in public administration is relevant. Signaling systems in state and municipal governance provide the foundation for the institutionalization of social relations within the state and the formation of a database of socially significant information. However, the intensity of these signals' influence on the behavior of social actors varies greatly. This influences the way these signals are perceived in different environments. Receiving and processing information from the signaling system is the responsibility of public authorities responsible for making socially significant decisions based on data flows and existing algorithms. However, the experience of the conducted study confirms the presence of a number of systemic failures that limit the ability to more fully incorporate information in addressing pressing social issues. These failures are not only technical but also methodological in nature, stemming from shortcomings in working with weak signals.

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