Communication Barriers of a Construction Company's Network Management

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Abstract. The article deals with the problematic aspects of inefficient communication in the production cycle from the point of view of enterprise management. The problem is considered from the perspective of different Sciences: linguistics, management, production organization. It is proposed to use information and Intelligent environments, software systems for modeling and production management. The article notes the importance of expert solutions in the innovation process. Based on the information approach to the development of communications, the possibility of creating institutional forms of innovation in the management of construction production is shown.

1. Introduction

The main connecting process in management is communication in natural language. Information exchange in building ensures the implementation of the main management functions: planning, organization, motivation, control [2]. Therefore, it is very important that communication is effective.

Communicative efficiency is understood as “such interaction of business communication participants in which the information transmitted by the sender is adequately perceived, understood and evaluated by the recipient, which allows to achieve a communicative goal, solve tasks and get a specific result (reaching agreements on any issues, making a joint decision, signing documents, etc.)” [1, p. 9].

On the way of correct and adequate perception by the recipient of the information message, communication barriers arise, which prevents effective communication, blocks it, and leads to communication failures [2, p. 15]. The message may not reach it completely, in a distorted form, or not at all. [3].

Here it seems appropriate to give a classification of communication barriers with parallel explanations of how such barriers are manifested in online communication.

Communication interference (noise). Misrepresentation or incomplete transmission of messages is a major problem for Internet communication, mainly due to technical problems [4-6]. Despite the continuous improvement of communication facilities, as well as progress in the speed and stability of Internet communication, problems remain and will remain in the future.

Barriers to misunderstanding:

- Semantic barrier, or the non-compliance of thesauruses (systems of values) of the interlocutors. In the Network, this is a common problem due to the discontinuity and clipping of communication. The discrepancy between values is particularly acute in communication between representatives of different social groups. The solution to the problem is possible with a clear
understanding of the status and position of the interlocutor, which automatically dictates its own etiquette. On the other hand, this solution may not be possible due to the anonymity of network communication.

- Stylistic barrier, or mismatch of speech style to the communication situation. In online communication, due to its discreteness and uncertainty in time, such situations occur regularly.
- Logical barrier, or discrepancy between the logical systems of the interlocutors. Here the problem is similar to offline communication, so there is no need to consider it in more detail in this study.
- Socio-cultural barrier. Given the globalization and globality of Internet communication, this barrier is emerging everywhere. The solution to this problem may be the distribution of cross-cultural communication courses together with geolocation services embedded in most modern "communication" software.

In the field of building management, it is particularly important to consider barriers in organizational communications. During the movement of information within the organization: up, down, horizontally from one department to another, from one person to another - often there is a distortion of its content due to deliberate change message text [5,7]. Sometimes one or another manager or employee modifies the received message in his own interests for further transmission. Distortion of information also occurs due to its filtering. “There is a need in the organization to filter messages so that only those messages that concern it are sent from one to another level of the organization or department.

2. Materials and methods

To speed up the flow of information or to make the message clearer, different data must be summarized or simplified before sending messages to various segments of the organization. Since it is, the managers determine which messages to send, all kinds of barriers in interpersonal contacts can push them in the exclusion of some and the accentuation of the other messages. Such selection can cause the miss important information to another sector of the organization or to receive information there with a significant distortion of the content” [3, p. 18;8].

The quality of information exchange in an organization is greatly influenced by the status differences of its employees. It is known that employees do not always inform managers about existing problems, they often say only what they want to hear from them. Managers are also forced to weed out, from their point of view, less important information due to the abundance of incoming messages through different channels, although the information that was not received may turn out to be significant for a certain group of employees. In building, such precedents lead to delays, accidents, and ineffective organizational decisions in project management.

The possibility of information distortions increases in organizations with multiple levels of management, since each subsequent level of management has the ability to correct and filter messages. Therefore, it is very important to systematically improve the communication system in the organization.

Language barriers are quite common in business communication. They are largely due to the different levels of the managers' proficiency in the language of communication. For example, a rich vocabulary for one interlocutor and a limited vocabulary for another; ignorance or misunderstanding of the meanings of used words with an abstract value, terms, foreign words, professionalism, jargon [9-11].

Thus, in the sentence “Our organization has developed a participatory management style”, the highlighted word (eng. Participation - involvement, complicity) may be unfamiliar to the addressee, which will lead to an incorrect interpretation of the transmitted message. Participatory is a management style in which the leader widely involves employees to discuss the most important issues of the organization.

In management, language barriers are especially dangerous in written business communication. This is inextricably linked to the communicative qualities of effective speech. Researchers understand
the communicative qualities of speech as “qualities that ensure mutual understanding of speech, the ability to communicate, that is, communion” [4,12].

With regard to written speech, relevant communicative qualities are clarity (unambiguity), accuracy (correspondence of the meaning of the utterance updated by the author to the transmitted meaning), brevity (the ability to convey a thought in the least number of words), completeness (opposite to redundancy of speech, detailed expression of thought), consistency (compliance with the laws and rules of logic) [5].

Interferences and barriers that grade the basic communicative qualities of a documentary text - clarity, comprehensibility, accuracy and uniqueness - pose the greatest danger to communication in the field of management.

The qualities of clarity, comprehensibility are distinguished by the text (a fragment of the text, a sentence) “if it is understood correctly in all its elements immediately, during the initial perception, and not upon repeated, not upon re-reading this sentence, and in this case, it should be recognized as clear in its stylistic (communicative) structure. If the readers are forced to return and rethink what they have read, then such a sentence should be recognized as communicatively unclear, that is, stylistically defective”. [13-15].

3. Results and discussions
Misunderstood text leads to the destruction of written communication.

Many researchers, in particular B.N. Golovin, M.D. Feller, B.S. Muchnik, M.V. Koltunova and others, distinguish between the accuracy of the concept (conceptual, objective) and the accuracy of its verbal embodiment[11]. Inaccurate understanding of the subject of speech or ignorance of the meaning of the used word can cause a communication barrier between the sender and the recipient of the message. In written business communication, signals of communication failures are repeated requests, oral and written clarifications through the available communion channels. At the same time, the achievement of understanding in these cases is always associated with additional time costs, which in the field of management can lead to organizational failures, financial or image losses.

In the organizational and technical documentation, special attention is paid to the speech pattern. The speech pattern is reflected in the text of regulatory documents, adopted formulas, technical calculations, etc. and is widely used in professional environment. Application of a speech pattern can reduce ambiguity and reduce the amount of information transmitted. It is enough for a professional to receive a brief, information-rich reference on the state of the construction project at a particular stage in order to make an organizational and technological decision.

BIM-modeling allows the use of a pre-organized system of professional communication, which ensures overcoming communication barriers in the networked management environment of the industry.

The basis of such solutions is the network analytical-synthetic process of professional communication, which is implemented based on the application of the model of convergent management. This model provides stable convergence and purposefulness of making and executing management decisions. [16].

The network cognitive expert-analytical method is focused on the application in the cloud and local mode [1]. In the cloud mode, it offers universal communication formulas to multiple users simultaneously, for example, organizing decision-making processes, conducting brainstorming sessions, etc. In the local mode, the unique capabilities of the system are adapted directly to a specific construction organization.

The environment for supporting the network expert-cognitive method includes the following elements:
- maintaining registers of user competencies;
- maintaining a register of experts on development strategies, priority areas, critical technologies, professional topics;
- conducting network strategic conferences;
- support of virtual cooperation mechanisms (semantically advanced conferences) using virtual reality elements in the situational center of construction project management;
- drawing up a request to experts in the form of questions to receive comment and assessment;
- collection of expert answers with comments on questions and ratings;
- network group conceptual modeling of the studied situation using methods of hierarchy analysis, cognitive structuring and evolutionary algorithms;
- ensuring purposeful and sustainable convergence of conciliation processes in the event of contradictions in the characteristics of the organization's work results with the development and formulation of key points for improving the situation.

Overcoming communication barriers is carried out here due to the mechanism of application of formalizing protocols and the organization of direct remote virtual contact with all communication participants at each specific key moment in time. This allows filtering textual noise and timely identifying errors and shortcomings of professional communication in the process of organizational and technological management of construction.

As an illustrative demonstration of the network expert-cognitive method, a specific example of modeling and implementation of the corresponding algorithms is given below. Three groups of factors are involved in the construction of the model:
- target factor;
- factors of required competencies;
- personality factors.

The target factor is a 3-level tree with weighted goals and objectives of communication of specialists. It is formed based on the application of the hierarchy analysis method, network expertise. The definition of the consistency of expert assessments is used. The target factor can be integrated as a holistic factor called, for example, "Success", which occurs when the quality of interaction is optimally matched to the requirements for competence.

On the other hand, the individualized project management profile is determined by factors such as:
1) quality of training;
2) cultural level;
3) personal interests;
4) strong-willed qualities;
5) inner motivation.

At the same time, the mutual correspondence of the quality of communication and the competence of the communicants in project management ensures the achievement of the target factor "Success" for the transition through the set of competencies. For example, from the level of the performer to the researcher, then to the initiative-creative unit of personnel and from her to the leader. Obviously, both the target position and the listed factors themselves are of a qualitative nature, which means that they can only be assessed in an expert way, for example, using assessment methods, network expertise, connecting cognitive modeling tools.

The technological core of the network expert-cognitive method is the construction of a cognitive model and the solution of direct and inverse problems on it. The cognitive scheme entered into the computer can be used to solve the direct problem and the inverse. The direct problem will answer the question: "Which of the combinations of controlling factors provides greater success, taking into account the current communication in the enterprise?".

Modeling has shown that the "Message Clarity" factor contributes to the value of the target factor equal to 0.61, and the "Information richness" factor - 0.29.

4. Conclusion
At the same time, it is possible to select the optimal set of qualities of the speech communicative model in the organization of building by applying a specific information model of communicative interaction, where each typical organizational and technological situation is described in a certain way
and included in the communicative decision-making algorithm. In this case, unnecessary information is eliminated and its content potential grows.

Thus, it has been shown that the identification of explicit and latent characteristics of the quality of communication in students and ensuring compliance with professional requirements with the subsequent interactive formation of a communication profile adequate to the needs is ensured by the use of a network expert-cognitive method.

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