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Research paper



Increasing the collaboration's effectiveness in networked online groups by the using of competency-based workflow

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Abstract

The article is devoted to the investigation of the possibility of increasing the effectiveness of the collaboration of experts using network tools for communication during general expert work. It is shown that the use of standard network tools simulating a "common room" on the Internet makes the communication of experts chaotic and uneven. Other situation arises, if in network communication to include workflow elements, when each expert will have his own task, there will be his partners. At the same time, tasks should be based on the competence of experts, related both to their knowledge and their ability to perform analytical or creative functions. In this case, communication becomes more homogeneous, and the effectiveness of general tasks to be solved is higher.

Keywords: *Competence; Crowdsourcing; Expert Communities; Group Expertise; Self-Organization.*

1. Introduction

1.1. Using web-based tools in network experts work

Nowadays communities of experts and researchers are increasingly using web-based tools to organize their work [1,2]. There are many network bases (such as ResearchGate, Google Scholar, Twitter and LinkedIn) that store information about researchers and allow them to contact each other [3]. Market expert networks sufficiently developed [4] which allows you to select the right experts. There are many tools (such as Google Tasks, Trello [5], Asano [6]) for organizing the project work of the team remotely. To organize the expert work of temporary groups (for example, for the development of a document or a collective expert opinion), online instant messengers or chats are now increasingly used which make it easy to add new experts, create new groups.

However, despite the simplicity and convenience of using such online tools for the organization of intellectual activity their effectiveness is low. The present article is devoted to the issues of increasing the effectiveness of the organization of group work of experts in online messengers and chat rooms. Increasing the effectiveness of the group's online communication of researchers and experts will significantly improve the quality and productivity of expert activities that require the involvement of a large number of specialists. It is especially important to increase efficiency in the management activities of large corporations and national governments where it is often necessary to obtain expert opinions in a short time including the opinions of many experts, and also use web-based tools [7-10].

1.2. The problems of experts' collaboration in the network

Problems of network communication of experts are related to the fact that participants in such network groups know each other less, and the division of labor arises spontaneously and not always in an optimal way. The role of leaders is assumed by the most active, but not always those who possess leadership qualities. Appeal to colleagues in these networking groups is often non-personalized and responds to such requests are not always made by the most competent participants of the network collaboration. Moreover, the most competent experts generally do not participate in the discussion, if they have not received personal treatment, even if they know the correct answer to the problem posed. Since in the network communication experts do not see each other and do not know who does what, many of them respond only when there is already a network conversation. These and similar problems often lead to the fact that web-based tools are not used for the collaboration of experts. In this paper, we show that the use of workflow and competency-based approach can overcome the problems of network experts' collaboration.

2. Results and discussion

Below are the results of the study, which were conducted with two groups of experts. The first group, in which there were 49 experts, was asked to write a general expert opinion. The amount of work for each expert was set, but the discussion of questions was conducted in a network messenger without any rules. Not only in the second group tasks was set, but they also were given the rules for working with network communication. At the same time, the rules of work was made with regard to the competence of experts in different fields of knowledge, as well as their ability to be creative (write texts), or to be analysts (review these texts). The work of the two groups was compared in the course of two days of their collaboration.

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In Fig. 1 shows the distribution of the activity of the experts of the first group. It can be seen that out of 49 experts only 9 communicated with each other in a network mode during the observed two days. Even this communication was extremely heterogeneous. In Fig. 2 shows how the experts communicated with time. It can be seen that the discussions were one-off, provoked by one of the experts and for a long time were not conducted. In Fig. 3. The distribution between the experts of the second group is shown. It can be seen that all 15 experts participated in the discussion to some extent. Moreover, their participation during the observed period was more homogeneous - see Fig. 4.

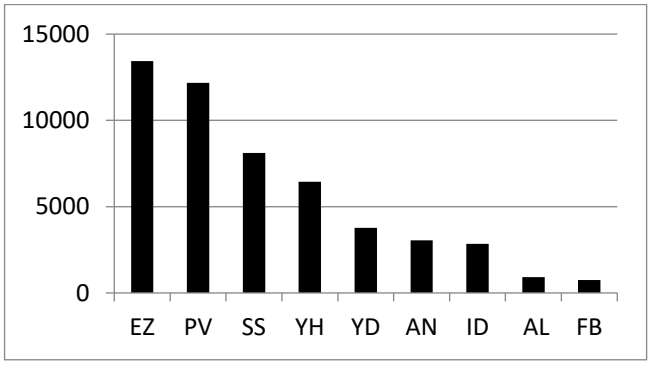


Fig. 1: The amount of messages (in bytes) of users of the first group's network messenger.

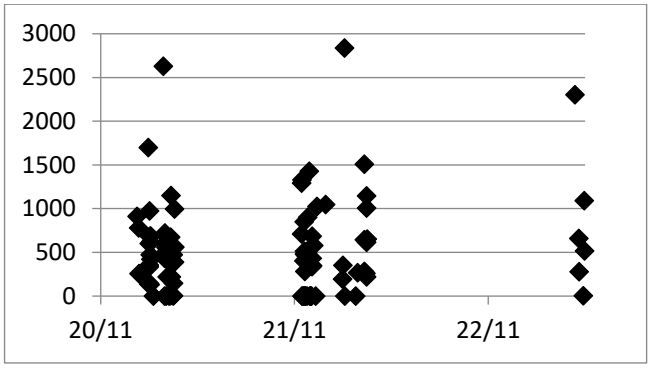


Fig. 2: Distribution of experts' work of the first group (the volume of their messages in bytes) in time.

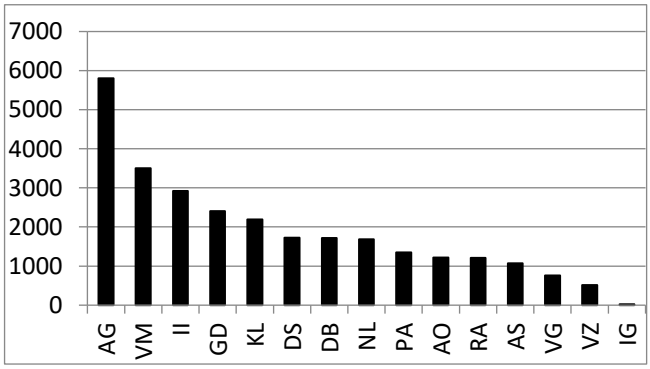


Fig. 3: The amount of messages (in bytes) of users of the second group messenger.

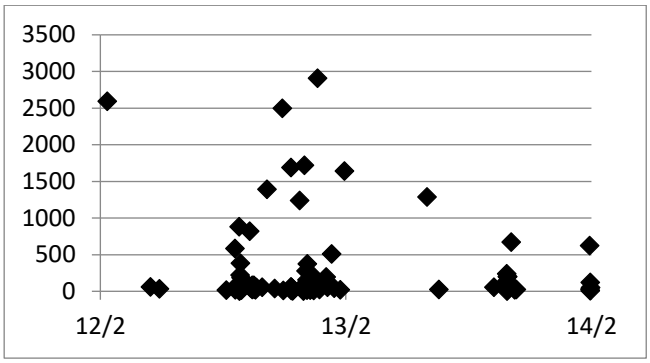


Fig. 4: Distribution of experts' work of the second group (the volume of their messages in bytes) in time.

In the case of the normal using of online instant messengers there are significant irregularities in the amount of contribution to the communication of its members and in the communication time. Usually in the total volume of the group's communications the main traffic is created only by a small part of its participants. Moreover, the time distribution is also chaotic due to spontaneous discussions initiated by one or another expert. This situation is typical for all crowdsourcing online sites where the expert in addition to solving his direct problems can solve his personal problems - advertising his capabilities, obtaining information, expressing his attitude towards colleagues, etc.

The situation changes if the online work group introduce a metric based on competencies. At the same time the classification of experts includes not only the areas of their expertise, but also their ability to write a text (or only to review it), the ability to work in a team (or only individually), etc. Competence metric allows you to organize the workflow in the online group so as to put before the experts are certain tasks associated with the solution of common concern and take into account the competence of experts. Using workflow reduces the activity of the participants which has no direct relation to the group solved the problem. The results of the research showed that the use of competency-based workflow allows to significantly increase the uniformity of communications both in terms of their distribution among participants and time. We can say that the use of competency-based workflow compresses the working time of experts. If the usual online communication expert is free to choose when to enter into discussions and when to keep silent, then a workflow such participation becomes an organized system.

3. Experimental

The study was conducted in two different communities, where experts knew about each other, but communicated mostly remotely. Many of them lived in different regions. In the first case, they were given a common network messenger Telegram. In the second case, chats of the social network VKontakte were used. In this case, the participants in the experiment from the second group were divided into competencies that were associated with one or another section of the expert opinion. There were experts who prepared the main text, and those who assessed the quality of the work, complemented it. The report on the work of group members was uploaded to a file that specified the time of the message, its initiator, and the message size in bytes. The results of the reports for the selected two days are shown in Figures 1-4.

4. Conclusion

In this way the study shows a significant increase in the efficiency of the group of experts in the case of competency-based workflow. The work did not compare the changes in the efficiency of experts for different tools of online experts work. At the same time, the results obtained are quite general and independent of the toolkit. As part of the work it is also suggested by the experts to evaluate

their work done using a workflow - this rating was high. However, it will certainly be necessary in the future to conduct more detailed studies that would, in addition to effectiveness, allow assessing the change in the quality of the collective activity of experts using competency-based workflow.

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