

ОРИГИНАЛЬНЫЕ СТАТЬИ / ORIGINAL ARTICLES

Дополнение к статье «О связях в науке на примере редакционной коллегии научного журнала»

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Аннотация

В дополнении показано, что приведенные в статье «О связях в науке на примере редакционной коллегии научного журнала» зависимости количества связей у рецензентов научного журнала с коллегами и длины путей между рецензентами при экспертной оценке рукописей за несколько лет подчиняются известным статистическим распределениям. Знание распределений позволяет сделать выводы о функционировании редакционной коллегии.

См. статью: Большаков Д.Ю. О связях в науке на примере редакционной коллегии научного журнала. Наука и научная информация. 2021;4(1–2):19–28. <https://doi.org/10.24108/2658-3143-2021-4-1-2-19-28>

Ключевые слова: граф связей рецензентов, рецензент, научно-технический журнал, нормальное распределение, показательное распределение

Конфликт интересов: автор заявляет об отсутствии конфликта интересов.

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Supplement to the Article “On Relations in Science: the Case of the Scientific Journal Editorial Board”

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Abstract

In this supplement it is shown that the dependences of the number of path lengths between vertices in the graph (between reviewers) and the number of connections of reviewers for the last few years that were discussed in Bolshakov's article “On relations in science: the case of the scientific journal editorial board” are subordinate to the known statistical distributions. These data may allow us to draw a conclusion about the scientific journal editorial board's functioning.

See the article: Bolshakov D.Yu. On relations in science: the case of the scientific journal editorial board. Scholarly Research and Information. 2021;4(1-2):19-28. <https://doi.org/10.24108/2658-3143-2021-4-1-2-19-28>

Keywords: reviewers connection graph, reviewer, scientific and technical journal, normal distribution, exponential distribution

Conflict of interest: author declares no conflict of interest.

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Having analysed the graphs given in Figures 3 and 5 in article [1], the author found the following dependences.

The number of path lengths in Figure 1 (Figure 3 in the article) is approximated by normal distribution with the parameters (mathematical expectation $\mu = 2.70$, root-mean-square deviation $\sigma = 0.86$) [2]. The normal distribution hypothesis has been verified and converges at the significance level of 0.05 [2].

Statistical distribution of the number of path lengths in Figure 1 allows the conclusion that the connections with the length of 7 and more are almost impossible for the scientific journal under analysis (the author has a hypothesis that it is valid for any scientific journal). It means that the six degrees of separation hypothesis is valid statistically [3], as its failure probability is 3×10^{-7} (7 and more is the path length between the reviewers in a connection chain via other reviewers).

The average number of the path lengths between the reviewers, i. e. the average path between different

specialists when analysing the researches published in the journal, is 2.70.

Distribution of the number of connections of the reviewers between one another when reviewing articles in the scientific journal presented in Figure 2 (Figure 5 in the article) is subject to exponential distribution with parameter $\lambda = 1/7.93$ [2]. The exponential distribution hypothesis is verified and converges at the significance level of 0.05 [2].

Approximation by exponential distribution in Figure 2 means that there is some average value of the number of connections (8 for the journal under analysis per each reviewer), increase of the number of connections in the limit tends to zero, and the distribution law allows evaluating a probability of any number of the reviewers' connections in the editorial board. In particular, the probability of existence of such a qualified reviewer that would have scientific connections for the articles under review with all 107 colleagues is 1.3×10^{-6} for the editorial board of the journal under analysis.

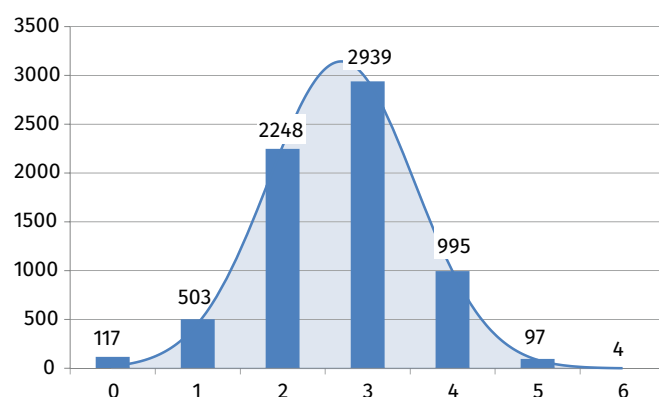


Fig. 1. The number of path lengths between vertices in the graph (between reviewers) along the ordinate axis and the path length along the abscissa axis and approximation of the number of path lengths by normal distribution

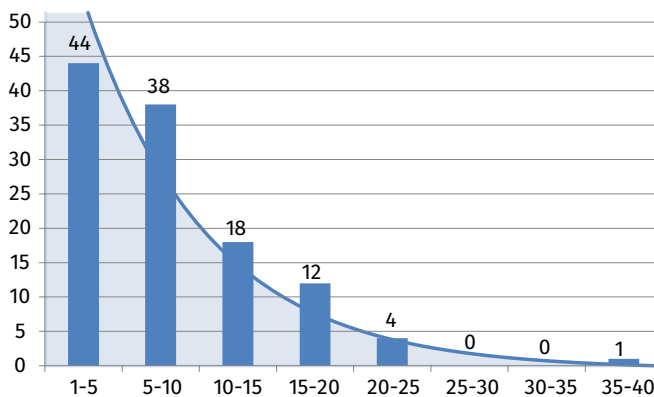


Fig. 2. The number of connections of reviewers along the abscissa axis and the frequency of occurrence of this event along the ordinate axis and approximation the number of path lengths by exponential distribution

The article shows that the more connections a reviewer has with colleagues the wider reviewer's research interests and the higher their qualification in a particular area are. However, this is not to say that a

reviewer with few connections is a reviewer with limited research interests. It may well be the case that the reviewer's research interests include, but are not limited to, the journal's subject area.

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