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CALCULATIONS IN THE TABLES «EXCEL» PRINCIPAL COMPONENTS FACTOR ANALYSIS

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Annotation. In the article the task of determination of eigenvector and eigenvector of cross-correlation matrix of order is examined to 10 and any more. The accessible method of calculations is offered after the

method of main components of factor analysis in the spreadsheets of "EXCEL". Authors position the article, as methodical, for the use in an educational process.

Key words: *factor analysis, principal component analysis method, correlation, matrix, eigenvector of matrix, eigenvalues of matrix, communality, uniqueness, load.*

In the work solved the question of realization the method of principal component analysis (PCA) . This problem is caused by the necessity to acquaint students with modern and promising methods of analysis, one of which is the factor analysis. However, it happens that the necessary software is not of available for analysis or requires special training for the user. Sometimes, there is also a problem acquiring the necessary software, sometimes there is also a problem learning languages and programming principles not included in the curriculum. So we set ourselves the task to find a relatively simple and intuitive method for calculation of principal components for matrices of the big order. In terms of mathematics, the method of principal components factor analysis is a well-known problem of matrix algebra, such as finding eigenvalues and eigenvectors of a square matrix. As a rule, in the educational process examples is using of finding those values only for matrices of second and third orders . Since the corresponding task is

solved by the method of characteristic equations that are represented, then the solution of the equations of order greater than the third is the difficult problem. It is clear that there is enough software tools, programming languages, etc. but there is also the problem of their availability, which we mentioned above.

The paper shows how using very limited opportunities spreadsheet «EXCEL» was implemented the finding eigenvalues and eigenvectors for sufficiently large size matrices to ten or more. The described procedure for determining the principal components factor analysis of the correlation matrix by using «EXCEL». The proposed method of computation is followed of the theoretical principles of the method of principal components factor analysis. Courtesy explanation of the procedure of the calculation from the standpoint of theoretical positions of factor analysis. In this we see methodical attractiveness of the procedure of the calculation for the educational process.

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