

## C740308 : MAJOR EDUCATIONAL STATISTICS

KEY WORD: MARKOVIAN TRANSITION MATRIX / FORECASTING

KETSANEE WASANATHIP : A CREATION OF MARKOVIAN TRANSITION MATRIX FOR FORECASTING SCIENCE AND MATHEMATICS TEACHERS IN SECONDARY SCHOOLS, EDUCATIONAL REGION FIVE. THESIS ADVISOR : ASST. PROF. NONGLAK WIRATCHAI, Ph.D. 138 pp. ISBN 974-635-908-8

The purpose of this research was to create a Markovian transition matrix to forecast the demand of science and mathematics teachers in secondary schools under the jurisdiction of the General Education Department, educational region five, in the academic year 2540-2549. The population were teachers who worked during the academic year 2534-2538 in secondary schools under the jurisdiction of the General Education Department, educational region five. The research instrument was the teacher inventory form which was used by the researcher to collect the data from report on education statistics. The data were analyzed by descriptive statistics, frequency distribution, graphic presentation, chi-square test and Markov analysis technique of forecasting.

The research findings were as follows:

1. The frequency distributions of teachers by age groups were similar when comparing among subjects taught, among provinces and among academic year during 2534-2538

2. The chi-square tests to determine whether the 3 rates of continuation, exit and entering varied across age groups, provinces and transition years, indicated that there were no statistically significant difference.

3. The created Markovian transition matrix expressed the similarity of the continuation, exit and entering rates between the science and mathematics teachers. The teachers in high age group would likely continue working and holding their position more than the teachers in low age group. The continuation rates of science and mathematics teachers in the age groups of less than 31 years were 74%, 76% and in the age group of 56-60 years were 100%, 96% respectively. The exit rates of teachers in all age groups were approximately equal to 10%, except those in the age groups of more than 45 years which varied from 0% to 3%

4. The result of Markov analysis technique to forecast the science and mathematics teachers in educational region five in the academic year 2540-2549 indicated that the total demand of science and mathematics teachers in all age groups would be 780, 804, 827, 849, 872, 896, 919, 945, 968, 992 and 686, 710, 736, 759, 784, 808, 832, 858, 882, 909 respectively.

5. A comparison of the mean squared errors in forecasting among Markov analysis and three methods of time series forecasting indicated that the Markov analysis was the most accurate one.

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