

## ERROR OF THE CAPACITY METHOD OF RARE EVENTS ANALYSIS, REMOTENESS FROM THE END USER

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*The works devoted to the study of rare events are very few. The most popular method for analyzing rare events is the theory of random processes, when events are represented by Poisson or Palm flows. Other methods have even less accuracy and validity. Nevertheless, the theory of random processes is not able to determine the event occurrence moment but only the probability of a given number of events for a fixed length time interval.*

*The paper describes the methodology for the rare events study, which is based on the difference in the events sources and the restoration of the proposed process parameters underlying the occurrence of these events. After the restoration of the process parameters, a pattern is sought by any other known methods, after which the patterns are extrapolated for the future. After extrapolating the process parameters, the process starts to obtain a forecast of the time moments of the following events occurrence.*

*The most common process in the economy is the process of consuming, or expenditure of products, or accumulating disturbances to a certain level. In this case, event sources can be modeled as capacities. The process parameter is the emptying speed of this capacity. A method for restoring this speed is proposed, after which future events can be predicted. I call this method of analyzing and predicting rare events the "capacity" method.*

*The article analyzes the influence of the position in the chain of distributors on the accuracy of restoring the original unknown function of the products consumption rate using the capacity method. Another goal is to find the magnitude of the relative error in the restoration of the original unknown function of product consumption.*

*With the help of mathematical analysis, the consumption process for the chain of distributors is considered, the inverse problem is constructed, the error is analyzed. As a result of the current study, the values of the error in restoring the original dependence in the sale of products through one intermediary, as well as in the sale of products through two successive intermediaries, are obtained. The extreme values of the intervals for the error of restoring the original dependence were obtained. On a specific numerical example, the validity of the formulas obtained is confirmed. It is shown that the error is not systematic. It is shown that the increase in error from the distance from the end user, with all other factors remaining unchanged, grows as a sum of a geometrically decreasing progression. Values of the variance and standard deviation for the relative error were calculated; it is shown that they grow very slowly.*

**Keywords:** rare events; capacity method; consumption rate; accuracy; error; dispersion; sequence of distributors; intermediaries.

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