

Advanced Information Technology for Development of Electric Power Market

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Abstract

Features of the electric power market functioning, in comparison with common properties of modern markets, are considered. It is shown that continuous reforms, which take place in many countries, are far from reaching effective solution. Sectoral peculiarities, connected with both technological complexity of the field and economic specificity of the market participants, form very special model of the market. The main way to increase effectivity of the market, to make it more competitive and, in the same time, socially responsible, is to use widely and deeply the modern information technologies, including technologies of artificial intelligence. A scheme of using the modern technologies has been proposed in the article. The first set of technologies merges methods of collection, storage, processing and presentation of information. The collection of market data can be realized. Particularly, by so-called “intellectual avatars”, which operate in the market as virtual agents. A reliable distributed storage of data, based on blockchain technology, is chosen. The big data technologies of data structuring, storage and processing are involved. Datamining methods include effective presentation of results in forms of graphs and diagrams. The second set of technologies includes core mathematical models and “digital twins”. They are aimed for data interpolation and extrapolation; in particular, for prediction of further system dynamics. The used neural networks have option of self-learning and self-development. At last, the third set is a set of user interfaces, which provides market actors by complete and adopted information and is organized in accordance with ideas of ergonomics.

Full Text

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