Demand Forecasting of the Energy Supply Chain in Industry 4.0 era: A Literature Review

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Abstract

Due to global financial crises in the years 2008-2009 and the consequences of them on the global economy especially in energy supply chains, the number of articles in demand forecasting of the energy supply chain was increased significantly. Although Industry 4.0 appears in this period, its solutions, and effects of them in energy demand forecasting are ignored by recent reviews in the literature. This study provides a comprehensive and new review of publications related to forecasting methods of energy demand in the last two decades between 2000 and 2020 with focusing on Industry 4.0 influences and the state-of-the-art progress in this subject. From the application of our paper methodology, a total of 267 articles is selected and about 73 different methods of energy demand forecasting are discovered. Consequently, among these methods, there are eight methods with the most citations which encompass 56% of total articles. Furthermore, the forecasting methods are categorized into traditional and intelligence methods and the most cited publications related to both are reviewed in detail. Moreover, the advantages and disadvantages of both traditional and intelligence forecasting methods as well as research limitations and future researches are determined.

Keywords
Demand forecasting, Demand of energy, Supply Chain (SC), Intelligence method, Industry 4.0.

Biography / Biographies

Ali Roozbeh Nia is a Ph.D. Candidate in Information & system Engineering at Concordia Institute for Information Systems Engineering (CIISE), Montreal, QC, CA. He holds a Master's Degree in Industrial Engineering, from QIAU (Qazvin Islamic Azad University), Iran. Currently, he works at Siemens Energy Canada for his Research Internship in Forecasting Demand Variation. His research interests consist of "Supply chain management", "Energy-efficient SC", "Green SC", "Inventory control", "Industry 4.0" and "Logistic".

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