A Comprehensive Solution for Electrical Energy Demand Prediction Based on Auto-Regressive Models

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Abstract. Energy consumption and demand are two widely used terms necessary to understand the functioning of the different mechanisms used in electrical energy transactions. In this article, the design and construction of a comprehensive solution to forecast future trends in electricity transactions using the historical data and two auto-regressive models were considered. Simple linear regression and a complete model such as ARIMA. We compared these models to find which one best suits the type of data considering their strengths and weaknesses for this specific case. Finally, to complete the comprehensive solution, the results are presented to the final user. This solution is mainly aimed at professionals who carry out activities related to contracting and managing electricity supply in public institutions. This solution pretends to collaborate to reduce energy demand and therefore, consumption.

Keywords: Prediction · ARIMA · Energy · Energy demand · Data capture · Auto-regressive models

1 Introduction

Administrators of municipalities and municipalities have as one of their tasks the management of resources, such as the supply of energy, water, among others. However, either for lack of resources or for a number of reasons, it may be the case that those responsible for the aforementioned entities do not know the information (quantity or distribution) on the consumption made in their locations that is available to them as happened with the covid-19 emergency that generated a lack of accurate information. In this work we consider that this knowledge is a fundamental basis for developing initiatives related to proper