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Portuguese Service Electricity Continuity Indicators: Quality Service Evaluation

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Abstract: Supply disturbances could be detrimental to some customers, such as in some industries, where these types of disruptions can represent a serious cost. Productivity and competitiveness in manufacturing and service industries increasingly depend on the quality of electricity supply and are also dependent on the good efficiency of continuity indicators. After initially monitoring its indicators in 2001, Portugal introduced a continuity of supply incentive regime in 2003. Since the introduction of the regime, indicators have consistently improved over the years, which pressures a constant improvement of the service related to client satisfaction. Recently, the frequency and duration of continuity service indicators were considered by the authors to study the quality of service in Portugal's mainland in the period of 2014 up to 2022 where a two–way analysis of variance (ANOVA) was performed aiming to evaluate the existence of differences between two factors: quality service regulation (QSR) zones and municipality code. The results pointed to the need to seek a more accurate analysis for each of the variables that represent continuity indicators. As a continuation of the previous work, and with such purpose, the authors transformed the already considered variables so they could get adequate validation during the residuals analysis. Suitable results were obtained and discussed. Service continuity, as measured by the frequency and duration of electricity supply interruptions, stands as a key determinant of service quality in electric utilities. Ensuring high service continuity not only upholds customer trust but also aligns with governmental regulations. The repercussions of frequent or prolonged outages are multifaceted, ranging from inconvenience to customers to diminished productivity in commercial and industrial sectors, and even potential public safety risks. The insights met from this study offer a fresh perspective on interpreting the dataset, suggesting both vertical and horizontal interpretations. Vertically, the QSR zone factor offers a broad nationwide view, while horizontally, the municipality code factor allows for nuanced exploration within specific QSR zones. Future research could explore a deeper understanding of the interplay between these factors and explore innovative strategies to further improve service continuity in the electric utility sector.

keywords: electricity continuity service; Interruption Frequency Index; Interruption Duration Index; two–way ANOVA.

MSC2020: 62-06; 62-08; 62-11.

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