

An Integrated Framework Based on Fuzzy AHP-TOPSIS and Multiple Correspondences Analysis (MCA) for Evaluate the Technological Conditions of the Teleworker in Times of Pandemic: A Case Study

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Abstract

The COVID 19 pandemic has affected the daily routine of all people, both in their family and work environments, globally. As a result, many companies in practically all the productive sectors of the countries have required to rethink several critical aspects of the business itself so as not to be absorbed by the crisis, avoid as much as possible losses in financial, human, technological resources, etc., and even disappear. In these challenging times that we live in, the corporate technology platform must provide remote connection facilities to employees. Thus, Teleworking is facilitated in a safe, flexible way, which does not delay the processes and business goals. To define this technological roadmap, it is essential to review the current specialized components, the network infrastructure, and recommendations to improve and optimize existing processes. Concerning the application of integrated methodologies for evaluating Teleworker's technological conditions during the COVID-19, some studies have been found related to health and safety conditions, growth in the implementation of this modality, and future trends in teleworking. However, the approach to technological requirements in teleworking during the COVID-19 pandemic is still limited and not sufficiently studied. To address this challenge, this paper presents an integrated framework based on the application of Fuzzy AHP, TOPSIS, and multivariate methods for the evaluation of technological conditions of teleworkers during the COVID-19 in the construction sector. The methodology's design is based on the international guidelines and pertinent scientific literature in Telework. The results obtained evidence that the criteria "Infrastructure," "Digital Connectivity Services," "Applications," and "Users" are relevant in the evaluation of technological conditions for Telework due to the few differences in their relative weights.