

## Third Party Logistics (3PL) Selection Criteria for an Indian Heavy Industry Using SEM

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**Abstract :** In the present paper, we propose an incorporated approach for 3PL supplier choice that suits the distinctive strategic needs of the outsourcing organization in southern part of India. Four fundamental criteria have been used in particular Performance, IT, Service and Intangible. These are additionally subdivided into fifteen sub-criteria. The proposed strategy coordinates Structural Equation Modeling (SEM) and Non-additive Fuzzy Integral strategies. The presentation of fluffiness manages the unclarity of human judgments. The SEM approach has been used to approve the determination criteria for the proposed show though the Non-additive Fuzzy Integral approach uses the SEM display contribution to assess a supplier choice score. The case organization has a exclusive vertically integrated assembly that comprises of several companies focusing on a slight array of the value chain. To confirm manufacturing and logistics proficiency, it significantly relies on 3PL suppliers to attain supply chain superiority. However, 3PL supplier selection is an intricate decision-making procedure relating multiple selection criteria. The goal of this work is to recognize the crucial 3PL selection criteria by using the non-additive fuzzy integral approach. Unlike the outmoded multi criterion decision-making (MCDM) methods which frequently undertake independence among criteria and additive importance weights, the nonadditive fuzzy integral is an effective method to resolve the dependency among criteria, vague information, and vital fuzziness of human judgment. In this work, we validate an empirical case that engages the nonadditive fuzzy integral to assess the importance weight of selection criteria and indicate the most suitable 3PL supplier.

**Keywords :** 3PL, non-additive fuzzy integral approach, SEM, fuzzy

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