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# Multi-Objective Production Planning Problem: A Case Study of Certain and Uncertain Environment

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**Abstract :** This case study designs and builds a multi-objective production planning model for a hardware firm with certain & uncertain data. During the time of interaction with the manager of the firm, they indicate some of the parameters may be vague. This vagueness in the formulated model is handled by the concept of fuzzy set theory. Triangular & Trapezoidal fuzzy numbers are used to represent the uncertainty in the collected data. The fuzzy nature is de-fuzzified into the crisp form using well-known defuzzification method via graded mean integration representation method. The proposed model attempts to maximize the production of the firm, profit related to the manufactured items & minimize the carrying inventory costs in both certain & uncertain environment. The recommended optimal plan is determined via fuzzy programming approach, and the formulated models are solved by using optimizing software LINGO 16.0 for getting the optimal production plan. The proposed model yields an efficient compromise solution with the overall satisfaction of decision maker.

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