Multi criteria decision making using Distance based approximation(DBA) and simple additive weighting techniques (SAW)

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Abstract: Productivity improvement is posing a great challenge for industries every day because of the difficulties in keeping track and prioritizing the variables that have significant impact on productivity. Therefore, this research aims to address this challenge by defining different attributes that play pivotal role on productivity from the management perspective. It illustrates a frame work to quantify and analyze the relative relevance of different decision factors and measures its effectiveness on production floor. In our daily lives, we usually weigh multiple criteria implicitly and we may be comfortable with the consequences of such decisions that are made based on only intuition. On the other hand, when stakes are high, it is important to properly structure the problem and explicitly evaluate multiple criteria. In making the decision of whether to build a nuclear power plant or not, and where to build it, there are not only very complex issues involving multiple criteria, but there are also multiple parties who are deeply affected from the consequences.

Structuring complex problems well and considering multiple criteria explicitly lead to more informed and better decisions. There have been important advances in this field since the start of the modern multiple-criteria decision-making discipline in the early 1960s. The purpose is to support decision-makers facing such problems. Typically, there does not exist a unique optimal solution for such problems and it is necessary to use decision-maker's preferences to differentiate between solutions.

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