

Chapter-2

Literature Survey

Multi-criteria decision-making is a vital discovery to address decision-making situations involving various conflicting factors (or criteria). Its significance lies in its ability to provide structured and rational decision support without the effect of the type of fields concerned. The enormous use case of this tool encourages me to carry out an in-depth analysis and study of MCDM and compare the advantages of its individual components.

2.1 REVIEW OF EXISTING RESEARCH

The field of multi-criteria decision-making is quite old. There has been innumerable research on this subject along with various book published on the ABC's of MCDM. One of the earliest studies on decision-making processes were by Benjamin Franklin. Since the 1950s, empirical and theoretical scientists have explored MCDM methods to enhance mathematical modelling capabilities, providing frameworks to structure decision problems and generate preferences from alternatives. In the decade 1960s and 1970s, many foundational MCDM methods were devised including Simple Additive Weighting (SAW), Analytical Hierarchy Process (AHP) and TOPSIS.

2.2 SHORTCOMINGS AND PURPOSE OF THE STUDY

Current studies of multi-criteria decision-making are focused on integrating it with modern technologies like Machine Learning and Artificial Intelligence. Although, a possible integration of these technologies can be a major break in the field of computer science, the practical applications of these technologies are hardly implemented and shown in studies. The basis of decision-making based on multi-criteria decision-making algorithms is to select the most optimal algorithm for a particular use case which might not be the same in another case.

The purpose of this study is to implement one such use case of multi-criteria decision-making and compare the best tool for making decisions. This can be objectively reduce the number of hours in choosing prospects and help us make better choices.