

ABSTRACT

As the shareholders of mining companies have become increasingly informed and active, the corporate values of companies have had to evolve to remain relevant and maintain shareholder confidence. It is no longer acceptable to deliver only good financial results, as such results must be obtained in an ethical and socially responsible manner. Traditional project valuation and ranking techniques, typically a discounted cash flow (DCF) styled approach, deliver traditional financial metrics such as net present value. A DCF approach however fails to account for changing shareholder values such as safety and social responsibility. This requires other approaches such as the Analytic Hierarchy Process (AHP) which has the potential to be a more inclusive tool in the ranking of mining projects.

The ranking of Brownfield mining projects is complex, with varied and often competing priorities in the evaluation process. AHP is one of several multiple criteria decision making approaches that can be applied to such complex problems. AHP is a relatively simple process which breaks the complex decision into a hierarchal approach, with criteria given a weighting according to their relative importance while assessing several options or solutions to the overall goal. The aim of this research is to apply AHP to the ranking of Brownfield mining projects to provide an alternative and potentially more inclusive project ranking than that provided through a DCF approach.

Three projects from a leading gold mining company were identified, analysed and ranked using the traditional metrics of NPV, IRR and Capital developed from project specific DCF models. The corporate values as presented in the vision / mission statements of the three largest gold mining companies were analysed for commonality. Common values within the mission statements were used to populate the AHP. The various criteria within the AHP were ranked against each other through the use of pairwise comparison. Data available through the DCF models as well as data available in public annual reports was used to populate the AHP.

The outcomes of the study found that traditional DCF based metrics (values) are heavily favoured over the newer corporate values. As such the rankings of the AHP mirrored the ranking based on the DCF, however, the AHP is an inclusive process. As shown through the hypothetical scenarios presented, if there is a shift in the weighting of the corporate values, the AHP ranking will differ from the DCF rankings.

With more inclusive corporate value systems as shareholder demands evolve, the traditional DCF approach to Brownfield project ranking is no longer inclusive of all corporate values. Additionally, the traditional DCF approach is unable to account for shifting priorities within established corporate values. An AHP approach not only allows the end user to include all corporate values but also allows the user to adapt to additional corporate values or a shift in the prioritisation of values. The research, through the scenarios considered, demonstrates the usefulness of using AHP under various conditions. AHP provides a viable and useful tool for the ranking of Brownfield projects.