Quantitative Analysis Approach

Name

Institutional Affiliation

**Quantitative Analysis Approach**

Quantitative analysis is currently the most preferred data analysis approach to make informed decisions. Through qualitative analysis, data is collected and evaluated for understanding business performance and behaviour. Therefore, Analytical approach allows results reported in arithmetic terms be given a certain percentage of confidence. In this project, a case study of Brazil Sugarcane Cultivation for Bioethanol Production is reviewed, and the outcomes are examined using sensitivity and post-optimality study.

Sensitivity study calculations mostly aims variables affected by other variables variations such as input variables. The study assists in pinpointing the significant variables that mainly influence the benefits and cost of the project (Lee & Lim et al., 2017). For example, expenses, operating costs and legal costs, revenues and financial interests are encompassed in this stage. It is calculated dividing the change in the change in input over the change in output.

Sensitivity of NPV to each input

Revenue = productivity data \* Sugar price on conveyance belt + [total reducing sugar \* raw material quality\* productivity data]

= 13085.54 + [0.95 \*135.10] \* 501

= 13085.54 + 128.345\*501

= 13085.54 + 64300.845

= 77,385.385

Cash flow= sugar field reform cost +Revenue – production cost

= 2652.24 + [0.0154\*(77,385.385-8663.43)]

=2652.24 + 1058.32

=3710.56

NPV at 16.3% discount rate = cash flow/ [1 + 16.3%) 1

= 3710.56/[17.3%]

Change in NPV=21448.32-1759.49/1759.49

=11.2%

Sensitivity in NPV =11.2%/0.01

=11.2%

The sensitivity of the Net Present Value is 11.2% which will happen if the sales price rise by 1%. Alternatively if the sales reduce by 1% the NPV value will decrease by 11.2% (Simões, Cervi & Batistela, 2018). The above calculations not only show the connection between output and input, but it also explains how sensitive output is to each input. Net present value is crucial and most sensitive to estimate the production costs of variables such as, fertilizers, agricultural pesticides, seedlings, mechanized operations, soil correctives, sugarcane cutting costs, loading and transportation.

References

Simões, D., Cervi, R. G., & Batistela, G. C. (2018). Quantitative Analysis of the Economic Risk of Sugarcane Cultivation for Bioethanol Production: A Case Study in Brazil. *BioResources*, *13*(3), 6497-6509.

Lee, B., Chae, H., Choi, N. H., Moon, C., Moon, S., & Lim, H. (2017). Economic evaluation with sensitivity and profitability analysis for hydrogen production from water electrolysis in Korea. *International Journal of Hydrogen Energy*, *42*(10), 6462-6471.