

## ABSTRACT

Danur Hydroponics is a hydroponic vegetable cultivation enterprise specializing in water spinach, pak choi, and curly lettuce. Located in Cibinong District, Bogor Regency, West Java, Danur Hydroponics operates within the B2B (Business-to-Business) sector, providing hydroponic vegetables to distributors and restaurants. The business commenced operations in August 2022. Sales data from August 2022 to December 2023 indicates a continuous increase in sales. However, production is constrained by a limited planting capacity of 1,500 planting holes, with a maximum monthly harvest of approximately 225 kg. To address this, the owner plans to expand the planting capacity to 21.000 holes by utilizing the full 1.500 m<sup>2</sup> area of land, which is 37,5 meters in length and 40 meters in width, for the hydroponic garden. Previously, only 100 m<sup>2</sup> of this area was allocated for the hydroponic greenhouse, measuring 10 meters by 10 meters.

In light of the current situation at Danur Hydroponics, a comprehensive analysis is necessary to evaluate the feasibility of the planned business expansion, including the extension of the hydroponic garden and the increase in planting capacity. Consequently, a business and feasibility study will be conducted to assess the future potential of Danur Hydroponics in Bogor Regency and to determine the viability of its expansion. This study will encompass market, technical, financial aspects, and sensitivity analysis.

The market aspect of the study includes demand projections for the period from 2025 to 2029 and the development of marketing strategies. The technical aspect covers estimates for labor requirements, operational layout, equipment needs, production capacity, raw material requirements, and other necessities (such as electricity, water, and telecommunications). The financial aspect includes projections for costs over the next five years, including investment costs, loan expenses and interest, operational costs, revenue forecasts, profit and loss statements, cash flow, and balance sheets. The feasibility analysis of Danur Hydroponics indicates a Net Present Value (NPV) of Rp1.024.287.912, an Internal Rate of Return (IRR) of 36,80%, with a Minimum Acceptable Rate of

Return (MARR) or Weighted Average Cost of Capital (WACC) of 8,45%, and a Payback Period (PBP) of 2,90 years. These results suggest that Danur Hydroponic is financially viable.

The results of the sensitivity analysis indicate that a decrease in demand has a safety margin of 15,91%, a decrease in selling price has a safety margin of 16,09%, an increase in operational costs has a safety margin of 22,21%, and an increase in labor costs has a safety margin of 26,41%. Risk assessment is also conducted in the feasibility study, where the total risk is 14,83%. This total risk percentage is added to the Minimum Acceptable Rate of Return (MARR) for comparison with the Internal Rate of Return (IRR). The MARR value is 8,45%, and when added to the total risk, the MARR with risk becomes 23,28%. Based on the calculations, the IRR obtained is 36,80%, which is higher than the MARR with risk. The Net Present Value (NPV) is Rp348.274.318, and the Payback Period (PBP) is 3,80 years. Therefore, it can be stated that the Danur Hydroponic business remains viable to operate, even when considering the associated risks.

The outcomes of the business and feasibility study, which consider market, technical, and financial aspects, are intended to provide the owner of Danur Hydroponics with insights into the viability of expanding the newly established business and ensuring continued growth in sales.

*Keywords: Feasibility Analysis (NPV, IRR, PBP), Market Aspects, Technical Aspects, Financial Aspects, and Sensitivity Analysis*