ABSTRACT

In 1992, Indonesia started subscribing or buying data from foreign DCS satellite space agencies to fulfill the required data. This dependency indirectly endangers the Republic of Indonesia's territorial security because of the foreign DCS above Indonesia's sky for commercial purposes. Therefore, deploying the DCS satellite ecosystem in Indonesia will promise guaranteed data and increase sovereignty over the data. If continue to subscribe data from foreign DCS satellite space agencies, Indonesia will be vulnerable to the policy dominance of foreign business and no security over the data.

This thesis research focuses on the possible deployment of a DCS satellite in Indonesia using a constellation satellite orbit in the Low Earth Orbit (LEO) case study for the niche market in Indonesia. The research was discussed comprehensively in technical, economic, and regulation. The technical analysis was conducted through link budget, coverage, and capacity analysis. The economic analysis assessed the demand forecasting, revenue projection, CAPEX-OPEX, and feasibility analysis. The regulatory analysis was presented in a policy brief that elaborates on the problem identification of the background of deployment of DCS satellite and provides the policy regulation recommendation.

As a result, the technical analysis indicated by the positive value of C/N obtained from link budget analysis for each link using a two-way interactive DCS satellite with four-link communication for the control mission and main mission is suitable and feasible to implement in Indonesia in the future. Another technical analysis is coverage that explains the coverage use of two constellations of DCS satellite orbit in LEO can cover 100% of the territory of Indonesia with six ground stations located in Indonesia, with the visit time in a day being an average of 3 hours and the maximum revisit time is 8.9833 hours. The economic analysis showed that the deployment of the DCS satellite in Indonesia could be known as an acceptable project according to the CAPEX-OPEX analysis and business feasibility analysis. The regulatory analysis results in the elaborate policy brief.

Keywords: *Data Collection System Satellite, Data Collection Platform, LEO Orbit, Techno-Economic, and Regulatory Analysis.*