

ABSTRACT

Indonesia's position in the ranks of world manufacturing is strengthened by the value of industrial output, which continues to increase from 2020 to September 2023. In 2020, industrial output was recorded at USD 210.4 billion, increasing to USD 228.32 billion in 2021 and again increasing by USD 241.87 billion in 2022. To increase efficiency and productivity in the industrial sector, we must transform towards Smart Manufacturing. Industry in Indonesia is also starting to transform towards Smart Manufacturing, one of which is the industrial area in Karawang, West Java. 5G private networks can support innovative manufacturing operations by providing fast, secure connectivity.

This research was conducted in one of the manufacturing industries operating in the FMCG sector located in the Karawang industrial area because it is one of the largest manufacturing industries in Indonesia. This research conducts a feasibility analysis of the technical and regulatory aspects of 5G private networks. Technical analysis is obtained from coverage analysis and capacity analysis using frequencies in the low and mid-frequency bands and scenarios of possible communications in a manufacturing industry. Regulatory analysis is obtained from a study of existing regulations related to implementation, resources, standardization, and benchmarks with other countries.

The total gNodeB based on coverage analysis is 1 gNodeB, and based on capacity analysis, gNodeB requirements vary for each type of communication that may occur and depend on the frequency and bandwidth used.

Keywords: 5G Private Network, FMCG, Smart Manufacturing, network planning, regulatory review.