

• It will motivate consumers to be an active grid participant and will include them in grid operations. In the modernized grid, well-informed consumers will modify consumption based on the balancing of their demands and the electric system's capability to meet those demands. Demand for new cost-saving and energy-saving products will benefit both the consumer and the power system. Consumers help balance supply and demand, and ensure reliability by modifying the way they use and purchase electricity. These modifications come as a result of consumers having choices that motivate different purchasing patterns and behavior. These choices involve new technologies, new information about their electricity use, and new forms of electricity pricing and incentives [14].

9. Conclusion

In this paper, we have observed that the Ghanaian electricity grid is faced with a lot of problems which include the insufficient and inefficient power generation facilities, inadequately maintained long transmission lines and distribution facilities, and outdated metering system used by its customers. The integration of smart grid technology and renewables into the Ghanaian electricity grid system remains the only solution to the electricity crisis in the country. We have shown that the smart grid technology is possible in Ghana through the various technological integrations, enhancement and policy recommendation given in this paper. The benefits of the smart grid technology will not only improve electricity production and efficiency in Ghana, but will also enable electricity consumers to become producers of electricity and enhance Ghana's international competitiveness. Limitation in this paper includes analysis like cost benefit analysis, Feed-in-Tariffs (FITs), Renewable Portfolio Standards (RPS), Renewable Energy Certificate (REC) which were not discussed in order to determine the best policy mechanism for renewable energy and smart grid integration in Ghana, therefore this limitation should be addressed in subsequent research.

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