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A NATURAL LANGUAGE PROCESSING ANALYSIS OF SOCIAL MEDIA DISCOURSE ON PERCEPTION AND BARRIERS TO COMPRESSED NATURAL GAS ADOPTION IN NIGERIA

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The adoption of Compressed Natural Gas (CNG) as an alternative fuel for vehicles has been promoted in Nigeria through the Presidential CNG Initiative (PCNGi) as a cost-effective and environmentally friendly solution to rising fuel costs and carbon emissions. However, public skepticism and infrastructural limitations pose significant barriers to widespread adoption. This study investigates public sentiment, concerns, and barriers to CNG adoption in Nigeria.

Using two Natural Language Processing (NLP) techniques, Aspect-Based Sentiment Analysis and Topic Modelling, qualitative data from X and Facebook were analyzed to uncover sentiment trends, prevailing concerns, and policy recommendations. The results indicate a dominant skepticism toward CNG, with high levels of invalid perceptions about CNG and NGVs, major barriers revolving around infrastructure limitations, high conversion costs, and distrust in government-led energy policies. Despite these challenges, some respondents acknowledge the cost-saving benefits of CNG, emphasizing the need for better infrastructure, awareness campaigns, and government incentives.

The study highlights the crucial role of public perception in shaping energy transition policies. Findings suggest that addressing safety concerns, ensuring equitable access to infrastructure, and fostering trust in the initiative are essential for driving adoption. These insights provide a foundation for policymakers and industry stakeholders to refine their strategies and enhance the successful implementation of CNG adoption in Nigeria.

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