ABSTRACT

Amid rising environmental concerns, aligning corporate sustainability efforts with public sentiment has become increasingly important, particularly in emerging economies. This study introduces a transformer-based natural language processing (NLP) framework utilizing a fine-tuned multilingual BERT model to examine online discourse on corporate pressure for green product adoption. 32,850 user-generated entries were collected and preprocessed from platforms including X (formerly Twitter), Reddit, and YouTube. The classification process was carried out in two stages. In Stage 1, discourse was categorized into five dimensions of corporate pressure they are regulatory pressure, market competition, corporate commitment, corporate challenges, and public awareness. Stage 2 focused on identifying emotional responses embedded in the text, including optimism, frustration, skepticism, concern, and empowerment. The best model, trained with a batch size of 16 and a learning rate 2e-5, achieved macro-averaged F1-scores of 0.85 and 0.93 for Stage 1 and Stage 2 respectively. These results demonstrate contextualized language models' effectiveness in detecting thematic and affective nuances in large-scale sustainability discourse. The approach offers valuable insights for enhancing strategic communication, monitoring public perception in real-time, and informing the development of responsive, sustainability-oriented policies and initiatives.

Keywords— Natural Language Processing, BERT, Green Products, Emotional Traits, Corporate Sustainability, Multi-label Classification