International Conference on Advanced Research in
BUSINESS, MANAGEMENT & ECONOMICS

24 - 26 October 2025 Geneva , Switzerland

Prepaid Electricity Meters and Energy-saving Behaviour in Low-income South African Communities

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Abstract

Access to affordable and reliable electricity remains a pressing challenge in many low-income communities. Prepaid electricity meters have been introduced in South Africa not only as a payment mechanism but also as a means of encouraging households to take greater control of their energy consumption. This study explores how such meter's shape energy-saving behaviour among households in selected low-income areas of Tshwane. Using a structured, interviewer-administered survey, data was collected from 400 household representatives, providing insights into everyday experience of managing electricity through prepaid systems. The findings suggest that prepaid meters foster a stronger awareness of consumption patterns, prompting households to adopt more deliberate energy-saving practices. Respondents valued the transparency and control provided by the meters, though some challenges, such as difficulties with recharging and occasional digital system failures, were noted. The study highlights how digitalisation, and the potential integration of AI-enabled smart metering and mobile platforms, could build on these positive behaviours by offering real-time insights and personalised energy management tools. For policymakers and energy providers, particularly Eskom, these results underscore the importance of aligning technological innovation with consumer realities to promote equitable and sustainable energy use.

Keywords: Prepaid Electricity Meters, Energy-Saving Behaviour, Consumer Attitudes, Digitisation, Ai, South Africa