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Sustainable Connectivity: Power-Line Communications for Home Automation in Ethiopia

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Abstract : This study investigates the implementation of Power-Line Communications (PLC) as a sustainable solution for home automation in Ethiopia. With the country's growing technological landscape and the quest for efficient energy use, this research explores the potential of PLC to facilitate smart home systems, aiming to enhance connectivity and energy management. The primary objective is to assess the feasibility and effectiveness of PLC in Ethiopian residences, considering factors such as infrastructure compatibility, reliability, and scalability. By analyzing existing PLC technologies and their adaptability to local contexts, this study aims to propose optimized solutions tailored to the Ethiopian environment. The research methodology involves a combination of literature review, field surveys, and experimental setups to evaluate PLC's performance in transmitting data and controlling various home appliances. Additionally, socioeconomic implications, including affordability and accessibility, are examined to ensure the technology's inclusivity in diverse Ethiopian households. The findings will contribute insights into the viability of PLC for sustainable connectivity in Ethiopian homes, shedding light on its potential to revolutionize energy-efficient and interconnected living spaces. Ultimately, this study seeks to pave the way for accessible and eco-friendly smart home solutions in Ethiopia, aligning with the nation's aspirations for technological advancement and sustainability.

Keywords : sustainable connectivity, power-line communications (PLC), home automation, Ethiopia, smart homes, energy efficiency, connectivity solutions, infrastructure development, sustainable living
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