Unlocking the Future: Exploring Consumer Behavior in AI-Powered Smart Cities via Simulation Scenarios – the example of Smart Homes

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Cite as:
Thirukketheeswaran Sinu, Kuhn Marc, Meyer-Waarden Lars (2024), Unlocking the Future: Exploring Consumer Behavior in AI-Powered Smart Cities via Simulation Scenarios – the example of Smart Homes. *Proceedings of the European Marketing Academy*, 53rd, (119732)

Paper from the 53rd Annual EMAC Conference, Bucharest, Romania, May 28-31, 2024

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Abstract

Urbanization is driving a substantial shift, with the United Nations predicting that by 2050, 67% of the global population will reside in urban environments. As cities strive to accommodate this growth, the development of smart cities becomes paramount. These cities employ artificial intel- ligence (AI)-enhanced systems to intelligently address complex challenges. Trust is a central issue in the adoption of AI-based services within these smart cities, with concerns encompassing the transparency of systems and ethical data handling. Contemporary research methodologies grounded in the use of scenario-based fictitious questionnaires exhibit limitations in replicating real-world interactions with AI solutions among research participants. These methods often fall short in capturing the intricate nuances of AI adoption. To address this gap, we advocate for the adoption of a simulation-based research methodology. A comprehensive literature review focusing on AI-enhanced smart home adoption substantiates the deficiency in current research methods, particularly in their ability to authentically represent the experimental dimension of the technology itself. In light of these findings, this paper proposes the design of an AI-driven smart home simu- lation environment. This conceptual framework presents a controlled setting that facilitates the exploration of diverse experimental scenarios, thereby enhancing the validation of AI-based smart home adoption research.

Subject Areas: *Consumer Behaviour, Information Systems*

Track: Innovation Management & New Product Development