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Designing Persuasive Sustainable Waste Management Application for Urban Community in Malaysia: Understanding End-User Perspectives

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Abstract

Solid waste management in urban areas in Malaysia is a critical issue that requires immediate attention. Waste management in Malaysia will become even more complex and difficult in the future due to the tremendous growth of the economy, urban population, and consumption patterns. The primary issue in this situation is the growing amount of waste production, which is outpacing the growth in disposal capacity. The Malaysian government has introduced the Waste Separation at Source Initiative (SSI), which mandates the Malaysian community to sustainable waste management practices in their daily lives. However, most urban Malaysians are unaware of these environmentally friendly waste management practices, despite the government's numerous attempts. Therefore, how to motivate the Malaysian community to adopt sustainable waste management practices has been of concern. A variety of persuasive technologies (PT) applications have been developed within sustainable HCI to promote sustainable waste management. However, its effectiveness among the urban community in Malaysia remains unknown. Accordingly, to develop an effective persuasive application for sustainable waste management, this study attempts to investigate end-user perspectives on effective persuasive design principles based on the Persuasive System Design (PSD) model. In-depth interview sessions were conducted with seven (7) participants, aged 31 to 47 years residing in various regions in Klang Valley. During interview sessions, participants were presented with several user interfaces (UIs) of waste management applications showing how each persuasive design principle had been applied. Next, we conducted a thematic analysis of positive and negative reviews of end-users to identify effective persuasive design principles to encourage sustainable waste management. Our results uncover 20 positives, 3 negatives, and 5 mixed views (positive and negative) perceptions. The positive perceptions fall under the following categories: reduction, tailoring, personalization, self-monitoring, simulation, praise, rewards, reminders, liking, social role, trustworthiness, expertise, surface credibility, real-world feel, verifiability, social learning, normative influence, and cooperation principles. Some of the negative perceptions include rehearsal, similarity, and recognition principles. Meanwhile, tunnelling, suggestion, authority, third-party endorsement, competition, social comparison, and social facilitation principles with mixed views (positive and negative) perceptions. © 2025, Semarak Ilmu Publishing. All rights reserved.

Author Keywords

behavior change support system; municipal solid waste (MSW) disposal; persuasive system design (PSD) model; Persuasive technology

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