

## User acceptance of the eSOS<sup>®</sup> Smart Toilet in a temporary settlement in the Philippines

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### Abstract

An eSOS (emergency Sanitation Operation System) Smart Toilet experimental prototype, aimed at improving the provision of safe sanitation in emergency settings, was field tested in a temporary settlement in Tacloban City, Philippines. The design, usage, and user acceptance of the toilet were all evaluated. Quantitative and qualitative data were collected through interviews and questionnaires, supported by the research-team's observations. The survey results indicated that 98% of users (both first-time users and those who tried it a few times) intended to use the toilet again. There were more features that the users liked than disliked. The in-built water supply and user-operated smart toilet features were liked, but the bad smell was disliked. User-operated smart features were an important factor in user acceptance although they were not the main incentives. Key recommendations are to improve the toilet's design to address the odor and cleanliness issues, make handwashing more convenient, and lower the height of the toilet bowl.

**Key words:** culture, experimental toilet, field test, user experience

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### INTRODUCTION

During a disaster, a community may be displaced and have limited access to basic necessities such as water, food, shelter and sanitation. Such communities are vulnerable to health-related risks. Disaster responses aim to reduce health impacts and meet the basic needs of the affected communities. The Sphere Handbook (Sphere 2011) provides guidance on the minimum standards required in humanitarian response for those affected to survive and recover, in stable conditions and with dignity. This encompasses the safe disposal of human excreta in order to keep the environment free of human feces and provide adequate toilet facilities. Safe excreta disposal depends on an understanding of needs, including the preferences and cultural habits of the intended users.

It is important to emphasize strongly the importance of user acceptance when providing toilets in emergency situations. Sanitation technologies provided in either emergency or developing country contexts must take user needs into account. This is particularly important for toilets, the user interface of the sanitation chain (Zakaria *et al.* 2015), which by definition reflects the relationship between