PHI-PRO: AN OFFLINE-FIRST DIGITAL ENFORCEMENT PLATFORM FOR SUSTAINABLE PUBLIC HEALTH INSPECTION IN SRI LANKA

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Abstract

Sri Lanka's 1,793 Public Health Inspectors (PHIs) enforce food-safety, disease-control and occupational-health law for 21.9 million people, yet about three-quarters of their statutory work is still recorded on paper. Paper-based recording delays disease investigations beyond the mandated 48-hour window and consumes nearly one-third of officers' working time in re-entering data, while existing government systems are desktop-based and fail in the estimated 60% of field areas with unreliable mobile coverage. This study examined whether a mobile platform that works without an internet connection could reduce this administrative burden without lowering inspection accuracy. Following the Design Science Research Methodology across four two-week Agile sprints, the authors shadowed and interviewed ten PHIs and reviewed official inspection forms, encoding more than 140 legal compliance rules. The resulting platform, PHI-PRO, is a Sinhala, Tamil and English web application that saves every record on the device first and uploads it when a signal returns; grades food premises out of 100, capping the grade whenever a serious violation is recorded; and alerts officers when notifiable-disease cases occur within 150 m of each other. A 14-day field trial with ten PHIs in the Colombo and Gampaha areas measured usability, paperwork time and grading accuracy. Officers rated PHI-PRO 84.2 on the System Usability Scale ("excellent"), compared with 72.25 reported for the current national system. Administrative workload fell by 38.6%, consistent with each record being entered once rather than copied between registers, and with automatic scoring. Automated grades agreed with three senior inspectors for 96.4% of premises; every disagreement occurred where the serious-violation rule lowered a grade that human assessors had rated higher. These findings show that offline-first digital recording can reduce clerical workload and standardise inspection grading while final enforcement decisions remain with inspectors. Wider trials beyond the Western Province are needed before national adoption.

Keywords: Offline-first application, Public health inspection, Digital health, Food safety grading, Disease surveillance