Real-time Data Base Management System for Efficient Data Recording and Management in Regional Dairy Cattle Farming

V. Kirishanthan[1*], A.M.B. Ratnayake[2], S. Gamage[3], S.C. Subasinghe[4] and K.K.T.N. Ranaweera[1]

[1]Department of Animal Science, Uva Wellassa University, Badulla, Sri Lanka*
[2]Department of Computer Science and Informatics, Uva Wellassa University, Badulla, Sri Lanka
[3]Uva Provincial Department of Animal Production and Health, Badulla, Sri Lanka
[4]Department of Animal Production and Health, Badulla Veterinary Division, Badulla, Sri Lanka

Real-time data are an essential part of successful dairy cattle farming. Hence, the objective of the present study was to develop a real-time database management system (DBMS) for Badulla Veterinary Division. This aims to enhance the efficiency of data recording and data retrieval by field officers engaged in routine field work related to animal husbandry. Initially, information on currently used DBMS was gathered using key informant interviews held with veterinarians and LDIs in Badulla Veterinary Division. A need analysis was conducted and the most vital data required to be recorded and retrieved (i.e. farm registration, disease management, breeding, and artificial insemination, vaccinations, and individual animal health status) through real-time DBMS were identified using a questionnaire. Based on the above information, a real-time database management mobile application was developed using Android Studio® 3.5.0.0, which consists of optimized user interfaces and an online database. Afterward, the mobile application was tested for its usability, conformance, and performance using identified end-users (Field Officers, n=10) of the application, and the data were collected using a structured questionnaire. Results had shown that 100% agreement with quality of information (exactness, reliability, completeness, usefulness, actuality, format, clarity, and complexity) and quality of the system (accessibility, integration, flexibility, timeliness, perceived, usefulness, user-friendly and user satisfaction level) and 80% overall satisfaction on the application. Hence, the real-time Android database management application has the potential to be used as an efficient DBMS in the dairy farming sector of Sri Lanka. A field trial is suggested in the future to assess the long-term usability of the developed DBMS at the field level.

Keywords: Android, Field officers, Mobile application, Veterinarian, Database