WEHUBIT

Project name
Machine Learning

Country
Zanzibar, Tanzania

Implemented by
D-tree

Budget
349,887 €

Duration
12/2019 – 05/2022

Contribution to SDGs

3 GOOD HEALTH AND WELL-BEING

Implemented by
Enabel

Financed by
Belgium
partner in development

CHALLENGES

Zanzibar faces high levels of neonatal mortality as a result of delays or inability to seek care and biological risk factors that go undetected due to lack of contact with providers. Moreover, the health system in general suffers from a lack of resources, especially for Community Health Workers (CHWs).

The Government of Zanzibar is implementing a national digitally-supported community health program to provide essential health, nutrition, and development services to pregnant women and children.

In that framework, machine learning (ML) is an innovative approach that has potential to improve effectiveness and efficiency of service delivery of Maternal Neonatal and Child Health (MNCH).

DIGITAL SOCIAL INNOVATION

The project aims to personalize and improve MNCH in Zanzibar by integrating predictive analytics into the national digital community health system using machine learning.

This innovation will enable CHWs to pre-identify women with high-risk pregnancies and target prenatal and postnatal services to mitigate risk and improve outcomes.

The solution builds on a highly effective digital system that has been implemented since 2011 in partnership with the Ministry of Health (MOH) in Zanzibar. The system gives the project unique access to comprehensive longitudinal client data that is continuously updated.

WEHUBIT EFFECT

INTENTIONAL ALLOCATION OF RESOURCES

Wehubit enabled the creation of a predictive model that will help policy makers to identify high-risk populations and improve their health outcomes.

CONTRIBUTION TO UHC IN ZANZIBAR

The project is the first to implement tailored care through machine learning in Zanzibar, providing a case study around which to discuss the successes and learnings of such initiatives and better understand how, where and when machine learning can add value to the Zanzibar health system.

CONTRIBUTION TO MACHINE LEARNING

This work contributes knowledge about the challenges and limitations of applying predictive modelling in health systems in resource-scarce settings, as well as contributing to the general knowledge base about digital decision support tools for CHWs.

RESULTS SO FAR

The project demonstrates how a machine learning model can successfully be integrated into a mobile decision-support tool that is used by CHWs in a low-income setting to make real-time predictions of clients' health outcomes. The successful deployment takes into account constraints such as limited internet connectivity and the limited exposure to technology of the CHWs who are using the tool. They have also proven that tailored care pathways can be built into the app, and that CHWs are willing and able to deliver different packages of care to different clients, tailored to each client's needs.

70% OF WOMEN ESTIMATED AS HIGH-RISK ARE ABLE TO CITE MITIGATION ACTIONS TO REDUCE THIS RISK

70% OF WOMEN IDENTIFIED AS HIGH-RISK RECEIVED AT LEAST ONE ADDITIONAL VISIT FROM CHWS

LESSONS LEARNED

1) An important learning from the project is that the data collected by CHWs is not sufficient to enable the development of a highly accurate prediction model for perinatal mortality. To improve the model they need additional data from for example medical tests conducted at health facilities.

2) They have also seen that the types of interventions that CHWs deliver are successfully influencing behavioural changes, such as a decision to go to a hospital and seek treatment but are less suited to directly addressing complex medical conditions such as perinatal mortality.

These learnings highlight the necessity of identifying and developing effective interventions that can be used to address the outcome that the machine learning model is predicting, alongside developing the machine learning model itself.

WOULD YOU LIKE TO KNOW MORE?