

## Fueling Efficient Reporting And Decision-Making In Public Health With Large Data Automation In Remote Areas, Neno Malawi

**Authors :** Wiseman Emmanuel Nkhomah, Chiyembekezo Kachimanga, Julia Huggins, Fabien Munyaneza

**Abstract :** Background: Partners In Health - Malawi introduced one of Operational Researches called Primary Health Care (PHC) Surveys in 2020, which seeks to assess progress of delivery of care in the district. The study consists of 5 long surveys, namely; Facility assessment, General Patient, Provider, Sick Child, Antenatal Care (ANC), primarily conducted in 4 health facilities in Neno district. These facilities include Neno district hospital, Dambe health centre, Chifunga and Matope. Usually, these annual surveys are conducted from January, and the target is to present final report by June. Once data is collected and analyzed, there are a series of reviews that take place before reaching final report. In the first place, the manual process took over 9 months to present final report. Initial findings reported about 76.9% of the data that added up when cross-checked with paper-based sources. Purpose: The aim of this approach is to run away from manually pulling the data, do fresh analysis, and reporting often associated not only with delays in reporting inconsistencies but also with poor quality of data if not done carefully. This automation approach was meant to utilize features of new technologies to create visualizations, reports, and dashboards in Power BI that are directly fished from the data source - CommCare hence only require a single click of a 'refresh' button to have the updated information populated in visualizations, reports, and dashboards at once. Methodology: We transformed paper-based questionnaires into electronic using CommCare mobile application. We further connected CommCare Mobile App directly to Power BI using Application Program Interface (API) connection as data pipeline. This provided chance to create visualizations, reports, and dashboards in Power BI. Contrary to the process of manually collecting data in paper-based questionnaires, entering them in ordinary spreadsheets, and conducting analysis every time when preparing for reporting, the team utilized CommCare and Microsoft Power BI technologies. We utilized validations and logics in CommCare to capture data with less errors. We utilized Power BI features to host the reports online by publishing them as cloud-computing process. We switched from sharing ordinary report files to sharing the link to potential recipients hence giving them freedom to dig deep into extra findings within Power BI dashboards and also freedom to export to any formats of their choice. Results: This data automation approach reduced research timelines from the initial 9 months' duration to 5. It also improved the quality of the data findings from the original 76.9% to 98.9%. This brought confidence to draw conclusions from the findings that help in decision-making and gave opportunities for further researches. Conclusion: These results suggest that automating the research data process has the potential of reducing overall amount of time spent and improving the quality of the data. On this basis, the concept of data automation should be taken into serious consideration when conducting operational research for efficiency and decision-making.

**Keywords :** reporting, decision-making, power BI, commcare, data automation, visualizations, dashboards

**Conference Title :** ICMDSE 2022 : International Conference on Mathematics in Data Science and Engineering

**Conference Location :** Singapore, Singapore

**Conference Dates :** September 08-09, 2022