CONDUCTING AN SMS SURVEY ON UTILITY OF THE DISTRICT HEALTH PROFILE TOOL IN KENYA

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ABSTRACT

Background:

In many countries, limited capacity inhibits utilization of data generated in the health sector for decision making[1].To address this, the MEASURE Evaluation project developed a decision support tool, the District Health Profile (DHP) tool and deployed it across Kenya. Six months post-deployment, an SMS survey was conducted to assess the utilization of the tool across the country.

Methodology:

The SMS survey was administered to all the 388 DHP tool end-users. An initial email was sent to participants to inform them (1) of the purpose of the survey, (2) that the survey would be administered via SMS, (3) that mobile carrier costs incurred would be reimbursed, and (4) of response confidentiality.

Each survey question was sent in separate SMS message with instructions on how to respond. A response would trigger an automated reply with the next question. On completion of the survey, a refund was credited to the interviewee's phone number.

Results:

Twenty-six percent (101/388) of DHP training participants who were sent the survey completed it in entirety. Survey completion rate for the messages sent in the afternoons was higher (73.7%; 28/38) compared to mornings (57.4%; 68/119).

Conclusions:

SMS can be used to effectively conduct short survey efficiently and at low costs. In conducting this survey we learnt some good practices including (1) prior notification of respondents (2) short autonomous SMS questions complete with instructions on how to respond, (3) timing the survey for the afternoons and (4) reimbursement on the costs of participation.

KEY WORDS

Public Health Informatics; Surveys; Mobile Health; Monitoring and Evaluation.

1. Introduction

National and subnational health managers rely on data generated from health facilities to make decisions about health care. To convert raw transactional data generated by health facilities into useful information for decision making calls for highly specialized skills including data analysis and statistical skills. These skills are, however, often lacking across the health sector and in health managers charged with the responsibility of making these data-driven decisions. It is on this premise that the MEASURE Evaluation project developed the DHP tool. The DHP tool is a decision support software product that fetches transactional data from excel datasets and using inbuilt automated routines perform background analytical processes presenting the output in excel dashboard summaries that can assist health managers to make informed decisions from the underlying dataset.

Six months after installation and training of the DHP tool, the MEASURE Evaluation project did a survey to measure its utility. With the high cellphone penetration in Kenya[2] the use of SMS was an easy choice to make. This was especially so since SMS has a very high delivery rate (over 95%) [3] and that it is a fast and low cost mode of communication[4].

The survey was comprised of a total of 6 text messages sent to individuals who had participated in the DHP training. The first 2 text messages being introductory messages and the other 4 text messages corresponding to the survey questions that warranted a response. These have been outlined as below:-

a) SMS1:

Hello, this is a message from NASCOP about the DHP tool that was rolled out in the districts btw NOV-DEC.

b) SMS2:

Please answer the questions. Once you have answered all 4 questions, you will be credited Ksh20. Responses are confidential.

c) SMS 3:

Have you entered /Imported data on the DHPT? Please answer 11 or 12 as follows:

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Yes: 11
No: 12

d) SMS4:

Have you run reports on the DHPT? Please answer 21 or 22 as follows:
Yes: 21
No: 22

e) SMS 5:

Have you discussed the DHPT reports with other members of the DHMT? Please answer 31 or 32 as follows:
Yes: 31
No: 32

f) SMS 6:

In what district do you work?

An open source messaging tool, a GSM modem and a netbook were used to administer the survey.

2. Methodology

During training on how to use the DHP tool, mobile phone numbers of end users were collected. Participants were informed that they would be contacted to assist in measuring the utility of the DHP tool post deployment.

Prior to initiating the survey, the MEASURE Evaluation project, through the National AIDS and STI Control Program (NASCOP), sent an email to all provincial heads and consequently the health managers at district level to inform them of the upcoming survey and its purpose. In this communication, the DHP tool end-users were also informed that the survey would be; (1) conducted through SMS text messages, (2) that any cost incurred in participating in the survey will be reimbursed and (3) that the responses were confidential.

In administering the survey, a phased approach was used, sending out the first 3 messages, this included the 2 introductory messages and the first survey question. The 3rd SMS warranting a response from the interviewee. Response to survey question automatically triggered the sending of the subsequent survey question. This approach was motivated by the need to keep interviewees locked to the process despite the time lag between the mobile text messages.

Constant monitoring of the process was needed as interviewees responded to the questions. This included answering any questions that the respondent may have. In cases where respondents did not follow the instructions in answering the questions, there was need to manually resend the next question or instructions on answering the current question. This needed to be done in a timely manner so that the survey process was more embodied.

For those able to answer all the questions of the survey, a compensation of airtime agreed at Kenya Shillings (KES) 20 was sent back to the interviewee's phone number. All others who could not finish the survey, the last question was re-forwarded in an attempt to bring back the interviewee to the survey. Credit reimbursements were done after the survey was concluded for all other parties participating in the survey.

All transactions were collated in an open source database, MySQL and later transferred to SAS® for further statistical analysis.

3. Results

Of the 388 DHP tools end-users that the survey was administered to in all 8 provinces (regions) in Kenya, 165 (42.7%) participated in the survey answering at least one question with 101 (26%) answering all 4 questions, completing the survey in its entirety. 128 and 107 interviewees responded to 2 and 3 survey questions respectively. Figure 1 below illustrates the participation across the four survey questions administered in the survey.

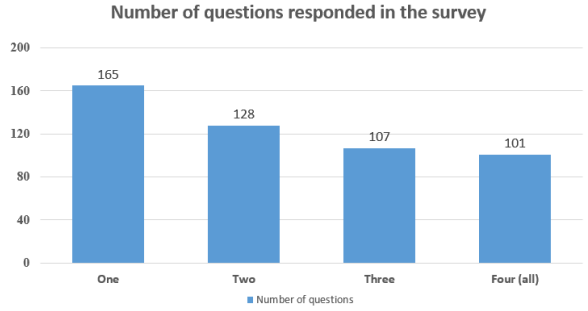

Figure 1: Number of questions answered by respondent

In 3 out of the 8 participating regions, half or more of the possible respondents participated in the survey with highest participation being from central province at 59.3% closely followed by Eastern South and South Rift at 50.9% and 51% respectively. Figure 2 below summarizes the participation and completion rate across the regions.

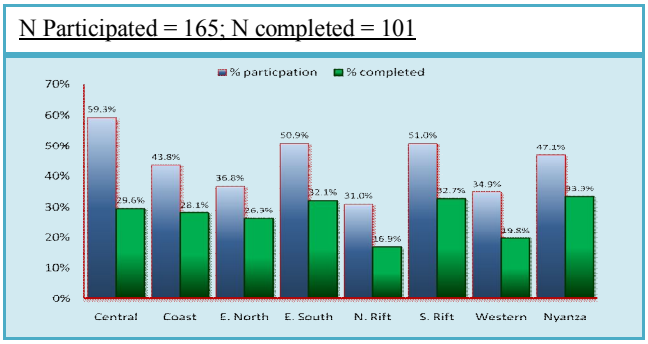

Figure 2. Percentage participation/completion in the DHPT text message survey by region

The response duration, measured as the total time an interviewee took to participate in the survey was recorded in all the 2674 transactions done in conducting the survey. There were disparities in the time taken to complete the survey. The shortest survey took 2 minutes to complete while the longest taking 30,063 minutes. The average

time taken by the respondent to complete the survey was 3,096.74 minutes with a median of 41 minutes. Table 1 below summarizes the time in minutes it took DHP tool end-users to complete the survey.

Time in Minutes to complete survey					
Minimum	25th Percentile	Median	75th Percentile	Maximum	Mean
2.00	18.00	41.00	897.00	30063.00	3096.74

Table 1: Time in minutes to participate in the survey

To facilitate further analysis, response times were clustered as follows:

a) Morning: 8:00:00am to 10:59:59am
b) Afternoon: 11:00:00am to 14.59:59pm
c) Evening: 3:00:00pm to 6:59:59pm

Among the 168 survey participants to complete the survey, a survey completion rate (73.7%; 28/38) was realized for text messages sent in the afternoon. This was a significantly higher completion rate as compared to text messages sent in the morning (57.4%; 68/119).

4. Discusion

Conducted over a 10 day period and targeting 388 health managers at subnational levels in Kenya, the SMS survey sought to elicit feedback on the utility of the DHP tool. A participation rate of 42.7% (166/388) was realized i.e. an interviewee responded to at least one of the survey question with 101 of these going ahead to complete the survey.

With good cellphone coverage an SMS would be delivered within a time span of 5 to 10 seconds. This however is not always assured due to a variety of factors including (1) being out of cellphone coverage areas, (2) not having units to respond to the text messages and (3) Cellphone running out of battery among other reasons. Delayed deliveries led to message queuing and thus significantly affecting the time (in minutes) it took an individual to complete in the survey (median: 41)

It was however noted that administering the survey in the afternoon and evening registered a lower turnaround time and higher completion rate as compared to mornings.

5. Conclusion

Mobile phone text messages can be used to conduct low cost but efficient surveys in resource limited settings with good mobile phone penetration. There are however limitations to text messaging including a 160 character limit per SMS and that lags in delivery times may lead to breakdown in communication.

The MEASURE Evaluation project in conducting this survey opted for short and autonomous text messages. A single text message would contain the survey question complete with instructions on how to respond to that question. The automated sending of the subsequent question based on a response to the previous question also assisted in ensured that respondents were kept embodied into the survey.

Other factors that we feel affected the response rates of this survey included the pre-survey sensitization conducted on all DHP tool end users; communication was sent by the project through NASCOP with assurance that all costs incurred will be reimbursed and responses to the survey questions are confidential.

The time of day to administer a survey question came out strongly as a factor to investigate and inform future SMS surveys conducted in similar settings.

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