Rapid Response Brief

January 22, 2024

What can research evidence tell us about:

How to improve healthcare workers' motivation to adopt and effectively utilize new technologies, such as smart paper technology, designed to improve data capture in their work environment

Key messages

Digital technology, like Smart Paper Technology (SPT), significantly reduces data management time for healthcare workers, but its successful implementation relies heavily on motivating healthcare workers to overcome adoption barriers.

Practical motivating factors include:

❖ **Training and support:** Comprehensive training tailored to roles and ongoing technical assistance boost confidence and overcome technical barriers.

❖ **Financial incentives:** Linking SPT use to results-based monitoring funds may incentivize adoption.

Personal motivating factors include:

❖ **Highlighting benefits of eHealth:** Reminding healthcare workers of efficiency gains and workload reduction from SPT should increase adoption.

❖ **Workload and personnel considerations:** Adequate staffing and reasonable workloads are crucial for the successful adoption of digital technologies.

❖ **Incentives and recognition:** Performance incentives and staff recognition based on SPT use metrics could motivate continued engagement.

❖ **Multisector opportunities:** Participation in research utilizing SPT data may further incentivize adoption.

Where did this Rapid Response come from?

This document was created in response to a specific question from a policy maker in Uganda in 2024.

It was prepared by the Center for Rapid Evidence Synthesis (ACRES), at the Uganda country node of the Regional East African Community Health (REACH) Policy Initiative

➕ Included:

- **Key findings** from research
- **Considerations about the relevance** of this research for health system decisions in Uganda

❌ Not included:

- Recommendations
- Detailed descriptions

Short summary

Background: Over the past five years, Mukono district has implemented smart paper technology (SPT) to improve data capture and reporting efficiency in health facilities, focusing on the Expanded Program on Immunization (EPI). Initially successful, recent indicators reveal a decline in SPT effectiveness, attributed to healthcare workers (HCWs) not using the technology as intended, leading to errors in electronically reported data. HCWs in the district cited scanner malfunctions among other technological challenges as reasons for not using the technology, however, these were disproved during the district health team (DHT) on-site visits. The assistant district health officer (ADHO) attributes the challenges to staff motivation and is interested in ways to boost healthcare workers' enthusiasm for SPT use. If these measures fail, the ADHO suggests a return to a paper-based system. The DHT seeks evidence on ways to motivate healthcare workers in adopting and efficiently using new technologies, such as SPT for enhancing data capture.

Question: *How can healthcare workers be motivated to adopt and effectively utilize new technologies, such as smart paper technology, designed to improve data capture in their work environment?*

Findings: Digital technology like SPT can significantly reduce data management time for healthcare workers, but its adoption hinges on overcoming motivational barriers. We identified both practical and personal motivators influencing the adoption of eHealth solutions:
Practical motivators, including a user-friendly design and intuitive interface, direct engagement with SPT inventors (Shifo) for feedback and support, extensive training coupled with continuous technical assistance, and financial incentives collectively guarantee user convenience and minimisse the workload for healthcare professionals.
Personal motivators such as clear benefits of SPT, tailored training and learning activities, high-quality, real-time technical support and coaching, adequate personnel and reasonable workload including multisector incentives leading to increased efficiency and reduced workload can increase adoption of eHealth technologies.

Conclusion: Understanding both practical and personal motivators is vital for addressing the challenges associated with SPT utilization. The proposed strategies, such as user-friendly design, comprehensive training, financial incentives, and recognition programs, provide a framework for motivating healthcare workers and facilitating the successful adoption of digital health technologies. Implementing both practical and personal motivators in combination can increase the uptake of new eHealth solutions.

Background

Mukono district has implemented smart paper technology (SPT) (1), over the past five years, aiming to enhance data capture and reporting efficiency in various health facilities, particularly within the Expanded Program on Immunization (EPI). The eHealth technology involves a process where paper-based patient data forms are filled out, scanned, and automatically populated into electronic versions, contributing to the district's reporting in the National Health Management Information System (HMIS) (2). While the use of SPT initially demonstrated significant improvements in data capture, recent indicators from Mukono district suggest a decline in its effectiveness.

The district health team (DHT) noted that staff members are not utilizing SPT as intended, leading to errors and discrepancies in electronically reported data. Although staff at health facilities claim technological malfunctions such as scanner malfunctions, on-site inspections by the DHT revealed otherwise. The scanners appeared to function optimally, however, they noted incomplete form submissions and instances where forms were not scanned at all. Faced with these challenges, the DHT is contemplating reverting to a fully paper-based data capture system, however, this may expose the process to even more errors, and would also prolong the time required by facilities to complete forms and submit data to the DHT.

The assistant district health officer (ADHO) suggests that the primary obstacle to the successful use of smart paper technology is a drop in motivation to use the technology among staff. Using this hypothesis, the ADHO requested the DHT to implement measures to increase the motivation of healthcare workers in charge of data capture towards the embrace of and use of smart paper technology. Only if these interventions prove unsuccessful has the ADHO suggested that the DHT consider a return to a fully paper-based system. In light of this, the DHT seeks evidence regarding incentives that could motivate healthcare workers to adopt and efficiently utilize new technologies, specifically those designed to enhance data capture in their work environment.

Rapid Response question

How can healthcare workers be motivated to adopt and effectively utilize new technologies, such as smart paper technology, designed to improve data capture in their work environment?

Summary of findings

The utilisation of digital technology such as SPT in data capture greatly reduces the amount of time spent on data management and improves the quality of the collected data(1). However, various underlying factors may hinder it's utilisation by healthcare workers, among which is motivation, which affects the successful implementation of SPT and the achievement of its full benefits. Addressing this challenge requires the exploration of different options to increase the motivation of healthcare workers to use digital tools.

Motivators are factors or influencers that drive individuals to take action, pursue goals, or engage in specific behaviors. Motivators can vary from person to person and are often shaped by a combination of internal and external factors (3). In this brief, we summarize the evidence along two major lines:

 i.   Practical motivators
 ii. Personal motivators

Practical motivators

One of the barriers to adoption of new technologies is an unclear eHealth system or a digital health solution that is difficult to use (4). Thus, involving staff in the development and feedback process of an eHealth system leads to solutions that are more intuitive, addressing their specific needs and aligned to their workflows. This, in the long run leads to a system that is easy to use, requiring minimum effort by the staff. Additionally, evidence suggests that the success of digital health technologies relies on user-friendly design, easy system navigation, and easily comprehensible interfaces. These factors play a crucial role in improving overall product performance, streamlining data collection and input (5, 6). In this regard, ensuring that the healthcare staff have a direct link to the inventors of SPT (2) for any feedback and guidance on use can go a long way in motivating them to learn how to use the technology.

> **Practical Motivators**
> 1. Involving staff in the system development and provision of feedback to improve the system
> 2. Comprehensive training for the staff
> 3. Develop a system where staff financially benefit from optimal system deployment

Similarly, a systematic review conducted in Ethiopia revealed that computer anxiety or low tecnological skills was the most common barrier in acceptance of eHealth systems (4). Providing comprehensive training tailored to different staff roles and ensuring ongoing support through, for instance, dedicated helpdesks and technical assistance can boost confidence and overcome technical use barriers (5, 6). Notably, the development of training programs should involve continuous engagement with the targeted staff to gain insights into their requirements and knowledge deficiencies (6).

Financial or monetary incentives from the government and health development partners can encourage the use and adoption of digital health solutions (6). One way the government and health development partners can do this is by allowing all healthcare workers who use SPT to benefit from the results based monitoring funds. When monetary incentives are tagged to the utilisation of digital technologies, it can increase it's adoption and use by healthcare workers.

Personal motivators

Healthcare professionals' readiness to use digital health technologies is a significant factor, with emphasis placed on their belief that the technological solution will increase their efficiency on certain tasks. This involves gauging the extent of employees' confidence in the utility of specific digital health tools and the proportion of individuals expressing an intention to use these technologies (6). Many

healthcare workers are comfortable with the prevailing way of doing things and are usually reluctant to try new things unless they offer clear benefits to them. Thus, reminding healthworkers of the clear benefits of using SPT for data capture and reporting is another way in which they can be motivated to adopt eHealth solutions (1). This can be properly attained through organising regular refresher trainings and offering ongoing technical support. Showing healthcare workers that SPT does not disrupt their workflow or increase workload would go a long way in motivating them to use it (5, 6).

> **Personal Motivators**
> 1. Reminding staff of the benefits of the technology
> 2. Training in use of the technology
> 3. Adequate staff to manage the supposed workload introduced by the technology
> 4. Incentives such as participating in research, recognition and awards

Moreover, overcoming personal obstacles can be achieved through the implementation of tailored training programs and educational activities that address the specific needs and skill gaps of healthcare professionals. As previously mentioned, availing real-time technical support and coaching emerges as a crucial element in enhancing healthcare providers' efficiency, alleviating implementation apprehensions, and potentially minimizing internal conflicts during system adoption (6).

The availability of personnel and appropriate workload can improve adoption of eHealth solutions. The presence of an adequate number of well-trained healthcare workers, coupled with a reasonable workload, plays a significant role in their adoption of eHealth technologies. In the context of personnel, a study in Brazil highlighted an increased workload due to eHealth, introducing new responsibilities transferred to a mobile app for previously recorded data. Some healthcare workers expressed dissatisfaction due to the lack of compensation for this additional workload, particularly impacting rurally-based nurses. Additionally, concerns were raised about unnecessary and inappropriate workloads in some settings, emphasizing the need to avoid overburdening healthcare workers and addressing compensation issues (5).

Another way to motivate healthcare providers to adopt new digital technologies is through incentives, for instance, availing opportunities to participate in research projects (6) utilizing smart paper technology data. Offering opportunities to participate in research projects connected to use of eHealth solutions may act as an incentive to healthcare workers as it lets them contribute to the body of knowledge (5). In addition, performance incentives and recognition of individual staff tagged to timely reporting and performance metrics as measured by the key performance indicators tracked by SPT can also contribute to eHealth adoption. Recognizing and rewarding staff for successful SPT use can motivate continued engagement and highlight its value contribution among the reluctant staff.

Conclusions

While incentives are important, they may not solely overcome reluctance to use new eHealth solutions, and issues like over-expectations of eHealth's capabilities may hinder adoption. Therefore, addressing motivation comprehensively, including incentives and considerations for the capabilities of the eHealth solution, is essential for successful adoption. By implementing a combination of practical and personal motivating factors, coupled with addressing potential concerns and providing adequate support, you can

increase the likelihood of healthcare workers adopting and effectively utilizing new technologies like smart paper technology, ultimately improving data capture and reporting.

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Conflicts of interest
None known.

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What is Rapid Response?

Rapid Responses address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days, if it is going to be of value to them. The Responses address questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

Glossary