

The Case for Solution Costing to Design Sustainable Digital Public Health Solutions

VillageReach Technical Note



Introduction

The COVID-19 pandemic has strained under-resourced health systems of many African countries.¹ Governments have responded by collaborating with the private sector and non-governmental organizations (NGOs) to accelerate the implementation of digital solutions that enable more efficient and accessible health care for communities.

However, while many digital health solutions can have a positive impact via services like rapid data collection, health system coordination and the timely provision of accurate information, governments in low-resource environments must balance this impact with affordability.

At VillageReach, solution costing is one method we utilize to support governments in finding this balance. Although its use in the public health sector is new, it has been used by the private sector for decades to drive innovation.² Furthermore, rather than displace traditional methods, it helps answer how much a digital health solution will cost over time.

This paper presents a case study from the application of solution costing to design, implement and transition an affordable digital health solution called [Health Center by Phone](#) in Malawi.

What is Solution Costing

Solution costing is a recurring exercise that enables the understanding of a solution's costs to inform design choices, to manage and to improve expenditures and to prepare yearly budgets. It utilizes actual cost data, making it an applied approach as opposed to a theoretical one. It starts by developing a cost model that is then populated with real data. Solution costing activities are conducted throughout the entire solution life cycle—from solution design to ongoing operations.

Solution costing has four major components: (1) develop cost model, (2) analyze actual costs, (3) estimate costs and (4) benchmark costs. Each component has specific activities and deliverables that support the decision-making needed for affordability and sustainability.

¹<https://www.brookings.edu/blog/africa-in-focus/2021/10/12/covid-19s-impact-on-overall-health-care-services-in-africa/>

²Hussey, R. and Ong, A. (2018) Strategic Cost Analysis, Second Edition. [edition missing]. Business Expert Press. Available at: <https://www.perlego.com/book/593226/strategic-cost-analysis-second-edition-pdf> (Accessed: 26 September 2021).

Thiry, M. (2014). Strategic value management. Paper presented at PMI® Global Congress 2014—EMEA, Dubai, United Arab Emirates. Newtown Square, PA: Project Management Institute.



Figure 1: Solution Costing Components

In comparison, *costing for health economics* focuses on the cost-benefit, cost-effectiveness and cost-utility of health programs or services. It is typically done as a one-off study. These more traditional cost analysis activities are familiar to public health professionals.

Solution costing	Costing for health economics
<ul style="list-style-type: none"> • Is the solution optimized for capital and on-going costs? • What are the opportunities for solution-cost efficiency? • How much should the solution cost to implement and operate based on the provided assumptions? 	<ul style="list-style-type: none"> • Are the overall costs and benefits of the solution greater than the opportunity cost of implementing it for health programs? • Is the proposed solution allocative and technically efficient from a funding or government perspective? • How far into the future do investments in public health solutions represent good value for money?

Figure 2: Costing questions by type

Digital Health Solutions

While solution costing provides critical analysis to support a wide range of decisions about any solution needed in public health, it is particularly important for digital health solutions since they involve complex design choices that include user needs, equipment, infrastructure, operational models and, more critically, the startup and ongoing cost implications. The affordability of a solution depends largely on these design choices. Additionally, the ability to manage risks effectively from the design phase directly correlates to a solution's success.³

Solution costing plays a critical role by ensuring that design, outsourcing and ongoing cost management decisions result in an affordable digital health solution that is ultimately sustainable.

Solution costing helps a public health professional navigate these complex choices and decisions and answer critical questions. Therefore, there are many benefits for applying solution costing.

Solution costing also helps governments make decisions with outsourcing operations and management to private sector partners. A comprehensive understanding of costs is critical to help a government decide whether to operate a solution in-house or whether to outsource it to a private sector partner. It may be

³<https://www.strategyand.pwc.com/gx/en/insights/2015/strategic-product-value-management/strategic-product-value-management.pdf>

advantageous to use private sector entities to operate a digital health solution if they can access lower costs due to already existing capital assets or lower operating costs.

Solution costing supports cost management to ensure costs are monitored on a regular basis. This often generates insights, questions, and opportunities for cost improvement. Through cost management, governments can proactively identify and assess risks related to changes in user behavior, technology upgrades and/or operating models that could compromise the affordability of digital health solutions.

Overall, solution costing plays a critical role by ensuring that design, outsourcing and ongoing cost management decisions result in an affordable digital health solution that is ultimately sustainable.

QUESTIONS TO CONSIDER

Which functions and features can we afford?

- Design decisions about certain digital health solution elements, such as features, contact channels, telecommunication services and number of personnel, can be complex.
- Solution costing provides insights on the potential implications of each option to support design choices.

What should we outsource?

- Implementing and managing a digital health solution requires considerable thought, expertise and investment. Choices between in-house and outsourced management can affect the costs of the solution.
- Solution costing enables us to look at each solution element and assess whether it is better to make or buy.

What capital and operating expenditures are needed?

- Short-term capital expenditure decisions can have significant impact on the on-going operating expenditures, undermining or improving solution sustainability.
- Solution costing enables granular analysis based on many factors, such as number of users, user behaviors, health topics, geographical scope and service level, to optimize capital expenditure decision making.

Figure 4: Questions to consider for costing digital health solutions

Digital Health Sustainability

CASE STUDY: HEALTH CENTER BY PHONE IN MALAWI

VillageReach is an expert in the implementation, scale-up, operation and transition of digital health solutions with governments.⁴ For example, we co-developed, operated, and transitioned the Health Center by Phone (HCBP) solution, locally called Chipatala Cha Pa Foni (CCPF),⁵ to the Ministry of Health (MoH) in Malawi. In

⁴ Implementation is the set-up of an operating solution with its people, process, and tools components. Scale-up is the move from initial implementation scope to full implementation scope. Operation is the ongoing execution of the solution in a stable scope. Transition is the transfer of all management and operations of a solution to a government team or an organization designated by the government.

⁵ <https://www.villagereach.org/what-we-do/pathways-to-phc/>

2020, the government transitioned CCPF to its Health Sector Strategic plans and budgets, ensuring its sustainability.

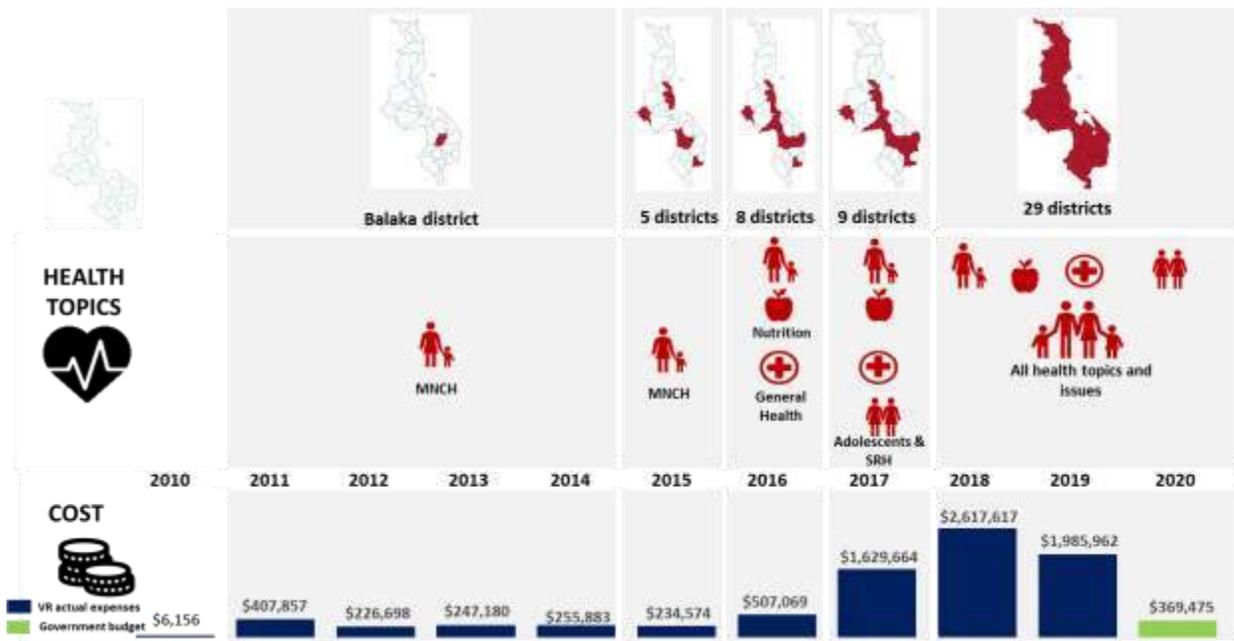


Figure 5: HCBP Implementation and Transition Journey⁴

From 2010 to 2019, VillageReach donors funded more than \$8.1 million on CCPF. This included capital expenditures and on-going operating costs. Major events such as the relocation of the CCPF site from Balaka to Lilongwe and the technology migration from Baobab to Viamo, which involved upgrading health workers' equipment, led to significant capital expenditures between 2016 and 2019. Leveraging the existing health system infrastructure resulted in a savings on capital expenditures to house the call center in both Balaka between 2010 and 2011 and Lilongwe in 2017. The cost increases from 2010 and 2019 were driven by geographic scope expansion and the coverage of additional health topics. As CCPF expanded to additional districts and included new health topics, costs have evolved to meet the increased call volume.

⁴WHO, A Toolkit for Governments Planning National-scale Telemedicine or Health Hotline Services. Unpublished

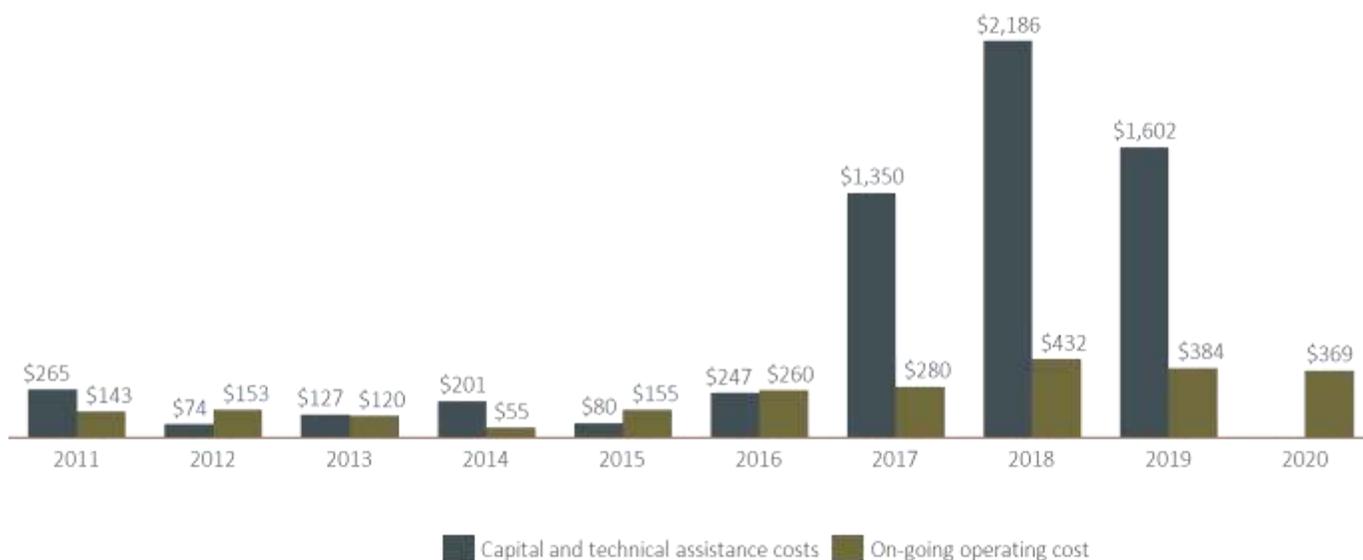


Figure 6: CCPF cost distribution (1,000 USD), 2011-2020

The government needs nearly \$370,000 per annum to sustain the hotline and operate at normal capacity. The reduction in ongoing operating costs was made possible by the extensive involvement of the private sector. VillageReach helped the Malawi government broker relationships with Airtel, the leading telecommunication services provider, and Viamo, a software service provider. Airtel absorbs the cost of calls, and Viamo charges a lower annual technical support fee.

Getting Started

Below are some of the key activities we recommend organizations undertake as they adopt solution costing:

Have a cost model validated by all stakeholders: Very few digital health solutions have a cost model that incorporates the granular cost elements that make up the digital solution. This reduces stakeholders' understanding of solution costs and severely limits their ability to “make smarter decisions” to improve the solution's sustainability.⁷

Make stakeholders aware of the cost implications of different design choices: Governments and partners often have little or no experience with a given solution. As a result, it is difficult for them to know whether their choices will result in a digital health solution that they can afford, especially over the long term. Solution costing translates design choices and decisions into cost estimates. They can then be used to develop financing plans or revisit design choices to keep a digital health solution affordable.

Train stakeholders in solution cost management: Digital health solution cost management is a newer area in which few government employees are trained. Government personnel must gain the competencies that allow them to constantly identify opportunities for cost improvement. Capacity building for government employees should be customized to their learning style, preferences and background.

Develop a long-term strategic plan for sustainability: Whether the solution is an in-house government operated solution or has operations outsourced to private sector partners, it is essential to have a long-term strategic

⁷ <https://hbr.org/2013/04/innovation-risk-how-to-make-smarter-decisions>

plan for sustainability. It should contain a five-year capital plan that considers demand, growth, infrastructure, technology upgrades and equipment replacements. The strategic plan should clearly distinguish between capital and operating expenditures.

VillageReach is interested in sharing its experiences and learnings from other organizations that have applied solution costing to their digital public health solutions. By sharing best practices, we can accelerate its adoption and increase access to health care for all.

To learn more, please contact:

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