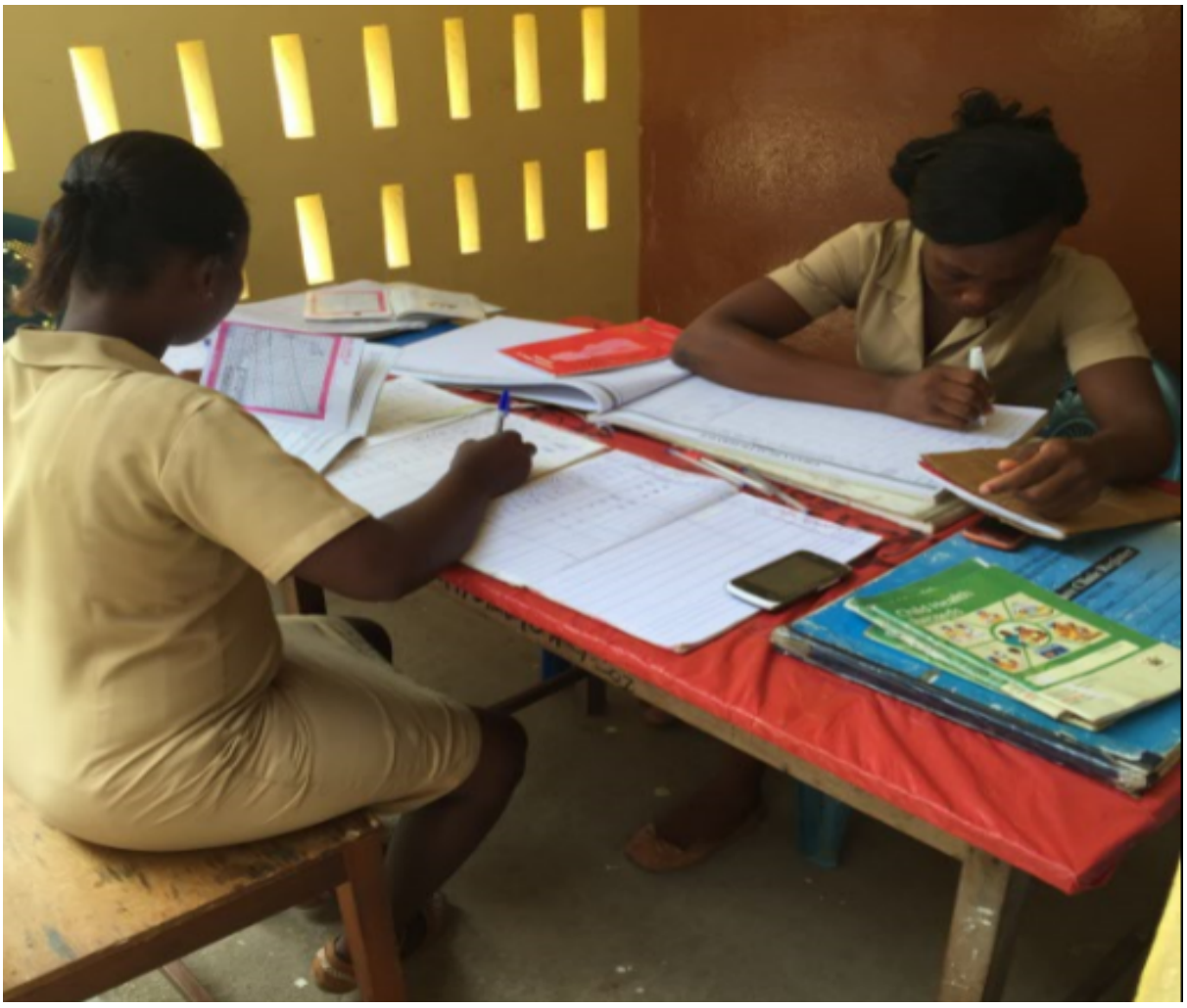

Ghana - eHealth Makes Sense

The Business Model

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eHealth - Project Summary

The project seeks to improve the management of health data, from source to storage and to provide critical but easy access to information for decision-making. This is will be based on a strategic systems automation and networking at all service delivery points in all major hospitals and clinics in Ghana. This will include networking of hospital processes from medical records through consultations, admissions, diagnostic informatics to patient discharge and billing systems. Automation of all critical support services, including stores and supplies will be facilitated. The project will also overhaul the disease surveillance system and transform it into an Early Warning System in the health sector, making it compactible with the WHO Global Alert and Response initiative.

The scope of the project includes the enhancement of the physical infrastructure and facilities and the development and deployment of hardware and software to will ensure that data capture for the purpose of reporting to the National Data Centre is enhanced. Data resulting from the operations of Community Health Workers will also be incorporated and analysis will be supported by the use of Geographic Information System to help in decision-making.

Summary of Business Problem

The health service in Ghana suffers from phenomenal inefficiencies in four broad areas of care. Firstly in the area of direct patient care, inefficient management practices at the patient – service interface results in inexcusable delays and omissions, which eventually translates avoidable consequences for the patient. Access to patient information for decision making continue to be a challenge even in medium sized hospitals. The high institutional maternal deaths in major hospitals is largely the result of inefficient management of patient information, making the isolation and management of at risk patient very difficult, to say the least. Delays at the outpatient departments, which has become a regular feature in public hospitals can also be largely attributed to the inefficient manual systems for managing medical records.

The second area of concern is the non-availability of health service data for decision making at all levels. This is because systems for data collection are fragmented and do not communicate to each other. This is especially so in hospitals where diagnostic systems have no direct link with other services like medical records, pharmacy and other supporting services. The net effect is that control systems do not exist and performance statistics contain too many gaps to make them realistic. Service coverage data therefore are only reliable through surveys.

Thirdly systems to manage health commodities exist but these are all stand alone systems which do not talk to each other. The health sector therefore has not mechanism of aligning inputs to out puts and therefore find it a challenge to properly account for resource use.

Fourthly, Ghana still experiences epidemics. The last cholera epidemic was in 2014 and it exposed the lack of preparedness of the health sector. The main problem is that while a disease surveillance system exists, this has not been fashioned out as an early warning system. Thus threshold for responding to epidemic diseases are only noted when the epidemic has already taken hold.

The Business Opportunity

These inefficiencies have multiple costs to the health sector. They result in ineffective decision making on patient care resulting in missed opportunities for spot-on diagnosis and prescription. This has a cost to the health sector. For instance, Ghana is noted to be a country with high levels of antibiotic consumption. This is just a symptom of the bigger problem of lack of patient information for decision-making. several other challenges can be attributed to the inefficient use of information as a result of weak or non-existent systems. These span from proper planning, effective design and implementation of interventions, effective use of available resources to the establishment of a responsive monitoring and evaluation system.

The Business Vision

The business vision of the project therefore is to:

Ensure that the health sector of Ghana become efficient and responsive to the health needs of the country.

This will be achieved by:

Improving operations of all sectors of the health system through the introduction of modern systems and technology, over a period of five years that will provide information for decision making at all levels.

Project Benefits

Benefits that will accrue to government on the implementation of the project is linked to the four main problem areas. Work done by the Ministry of Health at the Koforidua Regional Hospital in 2003, has shown that by improving controls at the medical records department alone, overall revenue for the hospital improved by over 40% within three months of introducing the changes. This level of revenue was maintained for more that one year when follow ups were made. The potential for revenue improvements was also noted at the wards and other support services including laboratory, imaging, and mortuary services. The establishment of centers of excellence such as the Cardio Thoracic Unit at Korle Bu is a clear example of what can be achieved by the project I all hospitals across the country.

Apart form revenue improvement which will come as a direct and almost immediate response to the project, cost containment measures that will be supported by the project as a results of controls and will lead to cost savings due to reduction in losses and leakages. Again work done at the ridge hospital in the late 1990s showed that as much as 20% savings were made

on drug procurement for the pharmacy department just by introducing checks to reduce excessive free consumption by staff.

Using these and other studies, and using only the low case scenarios, the following benefits are estimated for the project:

Revenue improvement (extra/additional revenue expected)

Base Year 2014	Year 1	Year 2	Year 3	Year 4	Year 5
	40%	30%	10%	10%	10%
GHc 505 m	GHc 202m	GHc 212.1m	GHc 92m	GHc 101m	GHc 111m
$ 126.25 m	$ 50.5 m	$ 53.03 m	$22.98 m	$ 25.28 m	$ 27.6m

Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
10%	10%	10%	10%	10%	10%	10%
GHc 122 m	GHc 135 m	GHc 148 m	GHc 163 m	GHc 179 m	GHc 197 m	GHc 217 m
$ 30.58 m	$ 33. 64 m	$37.01 m	$ 40.71 m	$ 44.78 m	$ 49.25m	$ 54.18 m

Using current dollar to cedi rate as $1.00 to GHC4.00

It is expected that over the first five-year period revenue will increase by over 142%, using 2014 as the base year. This is substantially higher than the 58% increase expected as a result of service and infrastructure expansion. While increase in revenue is projected as indicated above it is expected that benefits will substantially be higher in teaching hospitals as large departments are brought under unified control systems. It is expected that the first two years of the project will cover the large facilities while the project will expand to cover small facilities on the third to fifth years.

Cost containment due to efficiency gains (drugs only)

Base Year 2014	Year 1	Year 2	Year 3	Year 4	Year 5
	10%	10%	20%	20%	20%
GHC 215m	GHc 21.5m	GHc 23.7m	GHc 52m	GHc 62.4m	GHc 75m
$53.75 m	$ 5.38 m	$ 5.91 m	$13.01 m	$ 15.61m	$18.73 m

Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
20%	15%	10%	10%	10%	10%	10%
GHC 90m	GHC 81m	GHC 62m	GHC 68.2m	GHC 75.1m	GHC 83m	GHC 91m
$22.48 m	$20.23m	$ 15.51m	$ 17.06 m	$18.77 m	$20.64m	$22.71m

Using current dollar to cedi rate as $1.00 to GHC4.00

Drugs and pharmaceuticals constitute about 40% of the total health budget and drug sales make up 50% of the health revenue. It also constitutes the largest cost to the National Health Insurance Scheme, making up to about 80% of the total claims paid out. While the project will make a significant impact on drug revenue the real impact will be due to cost containment measures that will be put in place thus improving efficient management of total drug inventory. This will translate into less expenditure on total inventory while maintaining high levels of revenue. It is expected that over the five year period a total of GHc 234.6m will be saved on drug inventory as a result of efficient management systems. This will lead to a reduction in cost per patient in insurance claims and will increase scope for expansion of coverage thereby helping to meet government's universal health coverage agenda.

Improving emergency preparedness as a result of the improved disease surveillance and response systems will also draw significant benefits to the country. Although data on cost of management of previous epidemics are hard to come by a recent business case made by the government of Ghana to DFID was captured s follows:

As part its support to the national Ebola preparedness plan, the UK will provide **£4.7 million** to help respond to the ongoing cholera outbreak in Ghana. We will purchase cholera rapid diagnostic testing kits, help deliver training at regional and district level for cholera case management and behaviour communication change work at the community level on Ebola and cholera.

If this represents the cost of managing the recent cholera epidemic, it stands to reason that it also represents cost savings that will accrue to government if an early warning system, as will

be implemented by the project, is made functional so as to prevent such epidemic or improve the response.

Implementation Strategy

The life cycle of the project is outlined in the Project Charter, which was presented and agreed on by the ministerial technical committee on e-health in 2012, and has been the basis for further discussions, feasibility studies and planning, culminating in the drafting of an implementation roadmap. The project is being parsed into four phases – a Pilot precedes three strategically mapped-out phases. The table below is a depiction of the, scope / deliverables for the Pilot, and a summary of the benefits.

Goal Area	Goal Statement
Project Management Outcome/Impact Measurement	Establish a program management office (PMO) consistent with IT Governance and best practices. Implement effective programs to measure the outcomes and impact of the Collaborative eHealth pilot phase
Data Center / Hospital Networking	A state of the art data center facility operates 24x7, fully equipped but with limited functionality to Korle-Bu Teaching Hospital, for storage and maintenance of patient medical records.
NHIS linkage / Integration	A system / software to link or integrate with the NHIS - this will enable real-time validation of patients eligibility status with the NHIS system. It shall also enable same-day transmission of 'post-discharge' claims data to the NHIS claims system. This will curtail the delays in reimbursements to the Healthcare Providers. NHIS will become portable
Health Data Systems (Electronic Medical Records	Electronic Medical Records (EMR), implemented at Korle-Bu Teaching Hospital - linked to the repository, with records of all current Korle-Bu patients, maintained in the Data Repository. Establish Cost Center systems with linkages beween services – medical records, diagnostics, pharmacy, PACS and other revenue centers.

Patient Management Systems, etc)	A robust Patient Management Software to automate the Admit, Transfer and Discharge (ADT) process, for all encounters, and with linkage (interoperable with) to all departments - clinicals, pharmacy, ambulatory, claims, reporting etc
Bio-surveillance system	A Bio-Surveillance System - a 'same-day' early warning system
Technology Adoption / Training	Technology adoption and promotion program is in place that tracks health information infrastructure, products, services, training and social impact across all of Ghana to support continual improvement
Costs - $30M	

The Korle Bu Teaching Hospital – being the largest health facility in Ghana, with the largest number of services, including specialized services, the hospital generates the largest revenue per institution. It is also noted to be one of the most difficult to manage. This prompted a former minister of health to engage an independent professional management consultancy to take over the management of the facility. The need for such innovation still exists and the selection as part of phase one is to strengthen management to the level perceived under the proposal.

Conclusion

Based on the three areas outline above, namely increased overall revenue as a result of improved efficiency, improved cost containment as a result of improved control systems and a higher level of preparedness for epidemics, the first phase of the project which is estimated at $30million dollars will be able to pay for itself within two years of initiation. The overall cost of the project is estimated at $220M