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This paper questions the current practices of IT implementation in healthcare and presents a clear approach for developing the IT strategy. The paper brings out the common trappings in the Healthcare IT industry and offers a scientific process for IT implementation in hospitals - right from defining the scope, framing a sourcing strategy, choosing the correct vendor, implementing it and sustaining it.

Further, the paper puts together clear activities and actionable recommendations for setting up the required IT backed-integrated healthcare solution.

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Abstract

The healthcare delivery environment in India has unique challenges. Poor infrastructure and challenged healthcare delivery work process adds to the complexity. IT in health care can address various such challenges.

Currently hospitals are using short steps in this direction. There is no “right” software solution available for Indian realities. Large hospitals are using products designed for developed countries, while smaller nursing homes have semi qualified developers offering garage solutions. Overall , it leads to small pockets of excellence- far from the vision of seamless patient care.

A right IT strategy driven by a focus on processes is critical to deliver an integrated experience for patient care- within and outside the hospital.

This paper questions the current practices of IT implementation in healthcare and presents a clear approach for developing the IT strategy. By itself, IT solution cannot unlock the potential of a hospital. One needs a series of process improvement supported by IT tools to improve the process. The paper brings out the common trappings in the Healthcare IT industry and offers a scientific process for IT implementation in hospitals - right from defining the scope, framing a sourcing strategy, choosing the correct vendor, implementing it and sustaining it.

The paper discusses the merits of taking an integrated approach of IT implementation- emanating from a business process mapping and leveraging IT at the ‘most value creating’ workflows. Overall, seamless patient care can be achieved only through an integrated healthcare solution- IT or outside IT- which spans all processes across all functions - administrative, clinical, support, ancillary, departmental; thus ensuring information is seamlessly available and integrated modular workflows complementing one another.

It is important to identify which work processes to automate first. One should be aware of the traps of automating, operational low value added work first vs. automating steps offering high value viz. EMR vs. scheduling. Ideally hospitals should drive entire process automation to balance all work flows. As a rule, doctor-patient interaction should get precedence over operational work flow.

It is strongly recommended to align internally on purpose and role of IT in the hospital. The key users- doctors, nurses- should be continuously engaged to develop process requirements. Risk of non usage is biggest threat to IT implementation. Good training, hands-on support and simplified user interfaces are critical in ensuring early usage.

The paper puts together clear activities and actionable recommendations for setting up the required IT backed-integrated healthcare solution. The paper leverages several experiential anecdotes in the healthcare IT industry- Indian and international; while drawing heavily from the academic research on healthcare IT.

Overall, hospitals can leverage IT as a tool for developing a strong and sustainable competitive advantage. However, procuring healthcare IT is an involved process and should get strong senior leadership attention. Clearly, the vision of seamless patient care cannot be achieved on back of broken workflows and stand alone pockets of excellence but by an integrated and efficient IT enabled processes.

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Healthcare IT in India

Healthcare in India caters to a large population with increasing service requirements, however the healthcare delivery mechanisms are currently plagued with several process inefficiencies. Fragmented processes and inefficient workflows lead to poor patient care and incoherent activities in the hospitals.

Insufficient healthcare infrastructure and poor quality of healthcare delivery are the key drivers of this inefficiency. On one hand, there is an overall low number of doctors per patient while on the other hand, this poor doctor-patient ratio limits the quality time and attention to the patients. At times, the absence of medical records and poor diagnostic facilities leave significant gap in the clinical analysis. Further, there are informal levels of information and clinical data exchange- within the hospital as well between different healthcare centers- leading significant information loss and poor quality of patient care.

Given the significant gaps in the delivery, the Indian healthcare industry is a strong candidate for IT backed process improvement. Significant benefits can be achieved by streamlining activities, redesigning workflows and institutionalizing processes across the hospital. Globally, IT adoption and implementation of hospital-wide IT systems is an accepted solution to roll out efficient and standardized processes.

However, given the nascent stage of the industry, Indian hospitals are taking a cut-paste approach to IT. Owing to the poor supply market of Healthcare IT products, Indian hospitals have lesser choices and end up adopting a solution which is either over-designed and hence costly or under-designed and hence useless. Bigger hospitals end up automating select operations using ‘Best in Breed software’ while smaller hospitals employ the ‘next door software developer’ to quickly fix the billing and appointment processes. Unfortunately, both end of the spectrum remain wrongly served- and continue to struggle with the same inefficiencies which they started with. Given the resource crunch- such errors are costly and amount to overall skepticism against IT by the doctors.

A clear IT strategy and a structured approach for IT implementation can allay several of these problems and enable the hospital with processes capable of achieving the vision of seamless patient care.

What comes first?

You cannot get the correct solution, if you don't know the correct problem. The commonest trap for most IT implementation is an ambiguity on the problem definition. Typically, hospitals choose an IT solution to automate specific work flows or adopt the latest software which gives brilliant results. However, such an approach fails to deliver its potential and remain- what they were meant to be- pockets of excellence rendered redundant by the slow and inefficient processes around them.

One of a highly reputed hospitals adopted IT to schedule their patients for the doctors- to avoid waiting time at the reception. Three months later the crowd did not diminish- except that they were now waiting for getting the tests done as the scheduling in radiology department (X-rays, CT, MRI etc..) was not digital. It is important to notice that the expensive IT solution was unable to justify the RoI due to a single inefficient link in the chain – and a typical hospital has far too many such inefficiencies around. Also, it should be clear that the costs and returns do not justify a '100% automated solution'. In fact, the same hospital found it prudent *not* to buy a billing software to manage receivables- instead got an insurance company in the workflow.

Overall, IT for seamless patient care can't emerge unless the seamless-ness is ensured at the process level. A good IT solution emerges as an *output of an end-to-end process design exercise*- clearly identifying existing gaps, bottlenecks and repetitive inefficient activities. Such a process design exercise should cut across departments - and bring out specific workflows where IT can be leveraged to enhance process efficiency. In fact, several IT solutions would need a certain level of maturity of the non-IT processes to truly deliver the real potential of IT. Clearly, the final solution should be a *combination of IT solutions together with a gamut of process improvements outside IT*.

Key take away: ***Don't buy IT software– buy an end to end solution that caters to the IT strategy. Look for vendors who can do the end-to-end solutions***

Where does IT create the most value?

Several hospitals employ IT for varied activities ranging from administrative activities to device management and clinical processes. However, most of the IT enablement is driven by an opportunist approach of minimizing the cost and maximizing the automation of non-skilled manual activities.

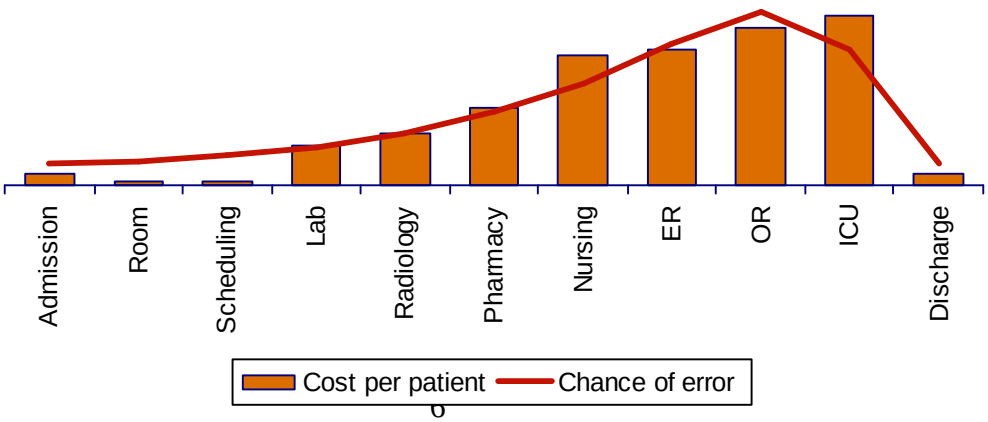
"I am buying for the first time. Let me buy a small one, the cheapest one"

"I don't trust my receptionist to manage appointments - but would rather wait before automating my radiology"

IT in healthcare is most relevant where data is important. EMR (Electronic Medical Records) are infinitely more important than the list of appointments today. Similarly, IT is useful to cut down repetitive activity. A gynecologist gets 75% of the 6-month pregnancy patients with the same set of diagnosis and same set of care plans- medicines, tests and instructions – all of which the doctor writes on the prescription again and again. An IT solution could relieve the doctor to attend the complicated cases or carry out quality conversation with the patient than carry out the clerical work. Overall, Healthcare IT should focus on driving the entire process efficient and effective.

Industry experience suggest that IT can be best leveraged in reducing cost of errors in clinical workflows than in administrative activities.

Exhibit 1: Potential of value creation



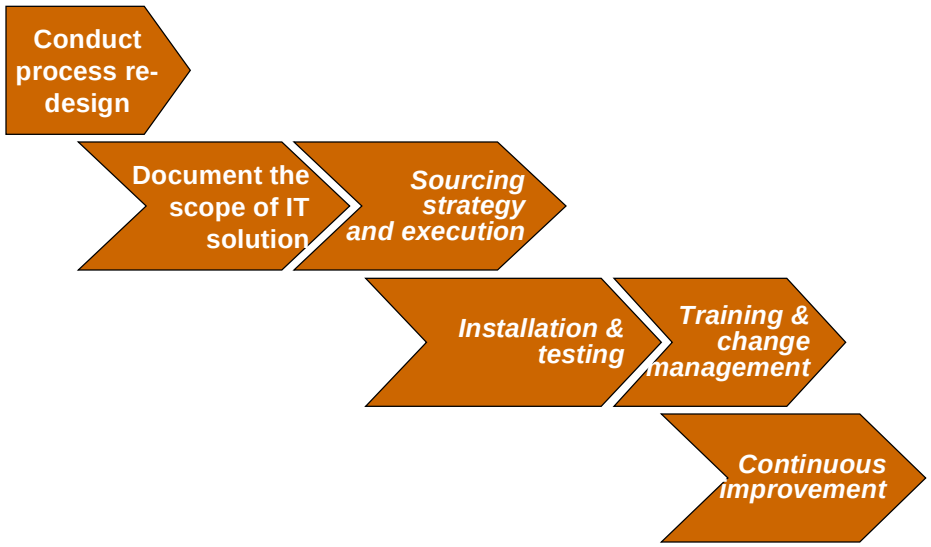
Healthcare IT can be of significant value in those activities where the hospital representatives (doctors, nurses, laboratory etc.) interact with the patient. This is a significant shift from the Manufacturing ERP systems where material or finances are at the core of the ERP package- while customer relationship management is seen as an add-on to the core module. In a Healthcare workflow, the high cost of error and high probability of error drive an inordinate cost of inefficiencies in patient-facing processes. These activities typically have the maximum impact on creating process fragments and are should be addressed first-hand to achieve seamless patient care. Clearly, a hospital should focus its IT spend more in these workflows than non-patient processes like billing, collection, scheduling, training etc.

Key takeaway: ***Prioritize automation of process step which is most critical to health care delivery.***

How to implement IT?

Having decided what processes need IT enablement- it is important to undertake a scientific approach for IT sourcing.

Exhibit 2: Seven steps of Healthcare IT sourcing



Document the scope

A documented scope of IT implementation is very important to control the implementation. Ideally, this scope of functional requirements should emanate from a process mapping exercise. Nevertheless, a stand alone scope document should be in terms of process elements than functionalities required.

The user group – doctors, nurses etc.- should be involved in preparing the process maps and identifying the process gaps and specific wish-lists. A To-be map prepared without the involvement of the users may result in a solution significantly removed from the actual problem – thus amounting to the similar inefficient fragmented as-is process. Nevertheless, the hospital IT personnel would need to translate these to-be processes into an IT framework- thus bridging the vendor with the doctors.

Preparation of sourcing strategy and sourcing the IT solution

As a best practice, clear metrics, deliverables and the sourcing plan should be in place even before a vendor is approached. The sourcing objective should be articulated and should drive all aspects of the procurement cycle- *"Why are we getting IT? Is it for short term departmental process improvement or are we looking at long term strategic value out of it? Is it supposed to give me flexibility or am I chasing standardization?"*

The answers to these questions drive the entire IT sourcing strategy- *Who should be my vendor- The cheapest solution or the end-to-end delivery person? How shall I measure the success of my project- Increase in revenue or increase in service levels? Should I go for Commercially available Off The Shelf (COTS) software or get a customized solution? Do we need the software to interoperate with my existing IT solution and/or IT solutions in affiliated hospitals? Do I need the DICOM, HL7, IHE enabled software? Will this vendor provide methods for benchmarking in order to measure outcomes? What should be my vendor selection criteria?*

The sourcing strategy drives the specific efforts in finding the correct vendor, negotiating and designing the contract. Given the poor supply market of healthcare IT, contracting

the correct IT solution is challenge and a broader market search is necessary to find and evaluate the vendors

Installing and testing the solution

Unlike manufacturing ERP solutions where the solution is 'released'- on a final 'Go-live' day, healthcare solutions need a significant pilot phase to test the solution under live conditions- human workflows are less predictable than manufacturing processes. Overall, the pilot on a group of patient reflects the ability of the software to respond to varied operating scenario.

During this period, the solution should be tested against the same metrics which defined the 'need' of an IT solution and the benefits measured against the as-is benchmarks. Unless the benefit metrics are defined and measured, the Return on Investment for the IT solutions disappear readily in 'intangible benefits'.

Training and change management

If there is one thing that derails IT implementation- time and again- is the ubiquitous skepticism against IT. *"We have treated patients since time immemorial, how can a software be better".* Training and change management, especially for the doctors, is critical for the success of IT implementation. Non-usage is one of the single largest reason which can inhibit the growth of healthcare IT in India.

As for any change initiative, the commitment of the senior leadership is essential to drive the adoption of IT in the organization. However, unlike manufacturing ERP, where change can be driven from the top; it may work totally reverse as doctors are more independent and are less commoditized. Change management for healthcare IT is significantly more difficult as this has to be driven at the user level, than from the top leadership.

Here the role of training, hand holding, befriending the doctor is much more critical than in any other industry. To start with, the skepticism arising from 'IT vs. me' has to be changed to 'IT for me'. The communication strategy and the involvement of the larger user group is critical for adoption of the IT solution. Innovative change management

methodologies – like ‘train the trainer approach’ – have to be deployed to drive the implementation.

Continuous monitoring to extract further value

It is estimated that more than 60% of the value of a software is realized 12 months after its installation. The quick wins typically emerge from plugging process inefficiencies or by reducing the number of errors. However, as the user gets familiar with the product, he starts demanding more from the solution. He deploys the same tool in innovative situations and creates much more value than what was envisaged as a sourcing objective. A configurable product from a long term vendor, committed to upgrades, can be a strong lever in ensuring continuous value from the investments

Key takeaway: ***Identify and document the desired process flow, convert to IT requirements. Pilot before implementation and provide ample support and time to realize true value of IT***

What is my correct solution?

There is no correct answer to this question – for in Healthcare IT, even the best solution may not be the correct solution. Overall, the correct solution is the one which can meet your process requirements – support your vision of seamless patient care. A highly customized solution impacts the quality of the product and limits upgrades. An off-the shelf product may be too rigid for your requirements. Hence, the technology and delivery capabilities of the vendor should be the most important constituent of the evaluation criteria. The flexibility in the product- its modularity and configurability- should be evaluated. The product should be an assimilation of IT knowledge as well as clinical knowledge. Further, the quality measures in software development result in less errors and robust solution

Key takeaway: ***Find the solution which solves <u>your</u> problem- doesn’t matter if it can solve all problems.***

Conclusions

Given the infancy of healthcare IT industry, adoption of IT in a hospital can be a strong sustainable competitive advantage for an ‘otherwise’ commoditized healthcare market. However procuring healthcare IT is an involved process and should get strong senior leadership attention. Healthcare IT solution should emerge as an output of an overall endeavor to improve processes- than as a stand alone tool for quick fix solutions. The challenges for IT implementation emanate from external as well as internal factors- and a robust sourcing strategy is critical to address these challenges. The vision of ‘Seamless Patient Care’ cannot be achieved on back of broken processes and stand alone pockets of excellence; but by an integrated and efficient workflow sitting on the back of smart and simple IT solutions.