



Technology and Tradition: Powerful Synergies for Modern Health

In an era characterized by disruptive innovations in Artificial Intelligence (AI) and machine learning (ML), it is noteworthy that simple tools like observation and the use of “pen and paper” still hold significant potential to revolutionize processes and improve the quality of services in healthcare units. It is crucial to acknowledge that resistance to innovation can result in significant missed opportunities for healthcare institutions and professionals who fail to keep pace with evolving times. This phenomenon is often characterized by either a fear of the unknown or inertia in the face of change, something common in any process of disruptive innovation. As technology advances and begins to be adopted by less demanding users, incumbents in the healthcare sector often react by creating complexity and increasing the costs of old technologies, further hindering the transition.

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Remember that in the universe of process management and continuous improvement, there is no such thing as null resistance. Therefore, we must coexist with it. In fact, resistance is useful as it allows processes to gain more traction and, when they advance, it is in a more solid manner. The replacement of traditional processes with the automation of new ones through machine learning or AI-based solutions, such as the use of generative language models for diagnostics and clinical case management, offers simpler, faster, and more effective solutions for everyday tasks. These types of innovations, considered extremely positive, demonstrate the potential of technology to improve the experience of healthcare professionals and patients, providing

more efficient and accessible working methods. It is imperative for institutions to adapt and be receptive to the inevitable. It is, therefore, crucial that healthcare facilities and professionals embrace these technologies and adapt to the changes. Innovation should not be feared, but strategically integrated into the organisations’ objectives to maximize benefits and prepare the ground for future generations. However, it is necessary to warn of other risks in introducing new technologies into the sector. Rushed implementation of information systems can perpetuate inefficiencies if they merely replicate existing practices without optimising the underlying processes. Technologies alone do not solve problems of poor management nor the incapacity of a manager

who cannot innovate or take risks. The digitization of processes, without genuine change practice, can result in the definitive automation of inadequate practices, exacerbating problems instead of solving them. This article explored the persistent relevance of visual management and direct observation (“with pen and paper”) in identifying inefficiencies that advanced technologies may overlook and presents some tools that help determine root causes of problems, paving the way for a flexible, robust, and enduring digital transformation.

TECHNOLOGY: THE MYTH OF THE MAGIC SOLUTION

The implementation of advanced technologies in healthcare has been seen as a magical solution for complex problems. However, this approach can become problematic if not accompanied by a critical reassessment of the underlying processes. Automation and digitization without prior optimization can result in automated inefficiencies, making it even more difficult to identify and correct fundamental problems. True digital transformation should begin with a detailed analysis and simplification of existing processes. Simple tools, such as taking notes with “pen and paper,” combined with direct observation techniques and visual management, can reveal bottlenecks and waste that digital tools often fail to capture.

ON THE FRONT LINE: THE LEAN VISION IN THE BATTLEFIELD

Direct on-site observation, typically known as ‘gemba walks’ in Lean methodology, are effective in identifying operational inefficiencies. By observing and understanding the process on-site, interacting with workers, and identifying opportunities for continuous improvement, we can more clearly pinpoint operational bottlenecks and waste. In healthcare environments, where every second and resource are crucial, these simple techniques can be extraordinarily effective.

Therefore, it is essential that before any attempt at digitalization, there is a complete understanding of the current processes. Keep the workers close, ask questions, all opinions are valid. Use techniques to encourage workers to express their opinions, whether it’s about the root causes of problems or the solutions they propose. Direct observation and visual management provide valuable insights that can guide the transition towards a more effective and efficient digital transformation.

THE HEALTH ORCHESTRA: COORDINATING THE INVISIBLE

Support area directors often face challenges stemming from a limited mastery of only their specific area within the unit. The operation of the other units in the value



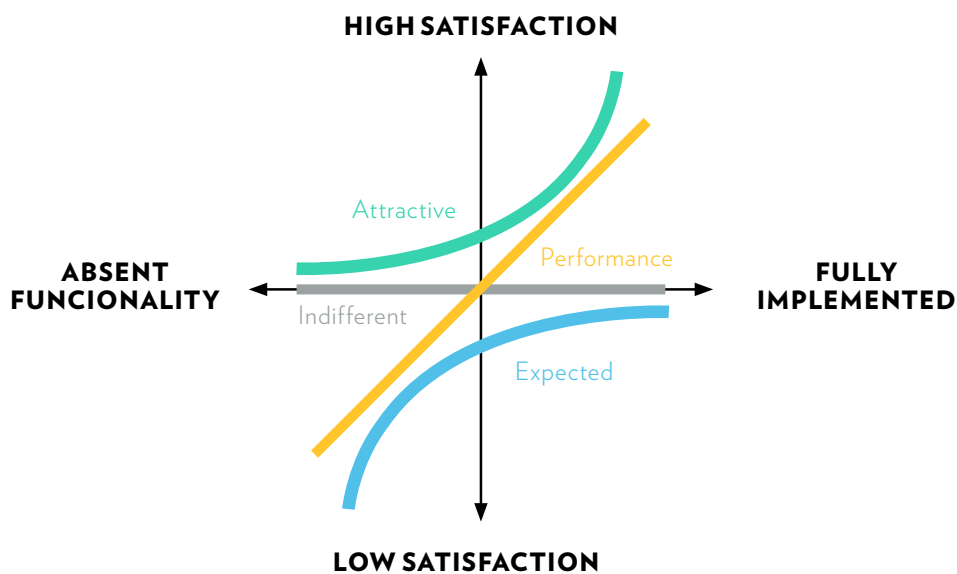
chain is not their problem. Poor cross-departmental management does not help alleviate the bottlenecks that hinder the organisation's overall performance. For instance, the ability of an information systems department to provide good service directly depends on the capacity of the various units that comprise that value chain. Without timely procurement of goods and services, or without prompt payment to suppliers, it will be difficult to provide efficient and effective services. Similarly, poor response from the IT helpdesk will affect the operations of any other unit in the Value Chain. Ensuring the best flow is key. The recurring issue of process inefficiency lies in the legitimate focus of each unit on achieving its operational goals, regardless of whether the institution meets its strategic objective upstream or downstream. This situation can only be resolved with leadership, vision, and cross-departmental decision-making power within the institution.

Managing health is about orchestrating resources just as a healthy company in any industry does. Good training in Lean, an MBA in management, or industrial engineering can be infinitely more valuable than

several semesters of hospital management education. Directors of each area are concerned with optimizing their tasks but lack a holistic vision. It is about understanding and meeting needs, comprehending the meaning of the customer's voice, increasing quality, and managing waste to improve efficiency.

THE INDIVISIBLE VALUE: LISTENING TO THE VOICE OF THE CUSTOMER

It is essential to recognise what truly constitutes value for customers in any healthcare service. Health care institutions must align themselves to better meet customer needs, prioritizing tasks that add value to the service provided and minimizing waste as much as possible. In Lean methodologies, there is a concept known as the Voice of the Customer (VOC). Typically, what the customer wants should be considered a central guideline in all operational and strategic decisions. If we can incorporate the premise that the true motivation is defining what constitutes value for the Customer, the entire entity will be oriented in that direction. The VOC versus the expected and attractive functionalities.



Expected Attributes	<ul style="list-style-type: none"> • Cleanliness and hygiene of the hospital • Basic care • Punctuality in appointments • Respect and courtesy from the medical staff 	These are fundamental attributes. If not met, they lead to significant dissatisfaction. When fulfilled, they are seen as normal and do not increase patient satisfaction
Performance Attributes	<ul style="list-style-type: none"> • Quality of medical care • Waiting time for consultations and procedures • Accuracy in diagnosis • Treatment effectiveness 	These attributes have a direct impact on satisfaction proportionally. Better performance in these aspects leads to higher satisfaction, while failures result in dissatisfaction.
Attractive Attributes	<ul style="list-style-type: none"> • Additional services like psychological care • Wellness programs • Use of advanced technology (telemedicine, monitoring apps) • Comfortable accommodation; 	These are unexpected attributes that, when present, pleasantly surprise and significantly increase patient satisfaction. However, their absence does not cause dissatisfaction
Indifferent Attributes	<ul style="list-style-type: none"> • Decoration of waiting rooms • Reading options in the waiting area • Background music 	These attributes do not significantly influence patient satisfaction, whether they are present or absent.

An example of this is the Kano model matrix, which categorizes different types of attributes we can expect regarding customer perspectives and their varying levels of satisfaction with the functionalities/ services they expect to receive. In healthcare, various motivations and drivers determine the importance we assign to the VOC. Middle management plays the crucial transversal roles that are fundamental in the effective orchestration of resources in healthcare entities. If the VOC is a driver, it means the entire institution must orient itself accordingly. Beyond the role of support and care-providing departments, it is the managers with cross-functional leadership who have the capital and obligation to guide the organisation’s culture in this direction. They should start by involving all stakeholders in choosing the issues to address. In this role, it is essential to create or identify a shared need since many people do not recognize the necessity for change. If everyone feels the same “pain,” the manager can shape a vision, involve stakeholders in

defining objectives, and demonstrate how change will benefit the institution and positively impact people’s lives. This professional is responsible for mobilizing commitments, managing risks, and communicating effectively and frequently, even when there seems to be little to say.

The responsibility for leading digital transformation projects or appointing interlocutors or project managers by functional units should fall on this middle manager. It is a common mistake to assume that the IT department, typically a support direction without cross-authority over decisions in other areas such as Clinical Direction and Nursing, should lead digital transformation projects. Middle management, with a holistic and integrated view of organisational needs and processes, is better positioned to lead these transformations effectively and aligned with the institution’s strategic objectives.

Implementing new technologies and managing change requires a concerted and collaborative approach that

goes far beyond technologies. Middle managers must ensure that the technological solutions adopted meet the needs of customers and healthcare professionals. This requires careful planning, clear and continuous communication, and active involvement from all stakeholders. Only in this way can it be ensured that digital transformation is oriented towards addressing the Voice of the Customer, improving operational efficiency, and the quality of care provided.

BEYOND BARRIERS: TOTAL QUALITY AND EFFICIENCY IN HEALTHCARE

The application of methodologies such as Total Quality Management (TQM) and the Theory of Constraints (TOC), promoted by Lean methodology, can significantly improve the quality and performance of healthcare processes. These approaches promote continuous and systematic improvements, involving all levels of the institution in the quest for efficiency. Identifying waste, a common practice in many industries, is not an unknown science. TQM aims for excellence in all areas of a healthcare unit, promoting continuous improvement of processes, products, and services through the involvement of all employees. TOC, developed by Eliyahu M. Goldratt, focuses on identifying and managing the constraints that limit a system's performance along the value chain. Remember that the central idea is that a value chain is only as strong as its weakest link. The key to a robust value chain in the healthcare sector is the strength of each of its links. An organisational commitment to continuous and integrated improvement is essential to overcome the inherent challenges of the sector.

COLLECTIVE TRANSFORMATION: CONTINUOUS IMPROVEMENTS

This paper reinforces the importance of an organisational commitment to continuous and integrated improvement, highlighting that only a collective and systematic approach can overcome

the inherent challenges of the healthcare sector. The effectiveness of Lean and Six Sigma in healthcare, which focuses on cross-functional transformation with collective effort, is evidenced by numerous experiences such as the Virginia Mason Medical Center in the USA, where the adoption of Lean Health Care resulted in significant reductions in waiting times and estimated annual savings of millions of dollars. In the UK, continuous improvements are consistently validated through studies conducted within the NHS, detailed in publications by the Multidisciplinary Digital Publishing Institute, Processes. A Red Cross hospital in the Netherlands reported substantial annual savings, amounting to thousands of euros, as described in Materials Today: Proceedings. Furthermore, a systematic review published in BMJ Open Quality in 2023 demonstrated the effectiveness of Lean Six Sigma interventions in reducing surgical cancellations in university medical centers, illustrating the global and ongoing relevance of these practices in resource optimization and improving the quality of healthcare services.



Conclusions

Continuous improvement is indeed the “secret,” but from a perspective that involves all levels of the organisation in the pursuit of incremental and ongoing improvements in work processes. Digital transformation in healthcare must be carefully planned to avoid automating inefficient processes. It should be implemented not because someone imposed it, but because a multidisciplinary team led by middle management has determined it so. Simple tools like “pens and paper” continue to be effective in identifying real problems in the workplace. The ability to observe directly and interact with employees allows for the identification of root causes of inefficiencies that digital tools may not capture.

The integration of simple observation techniques with advanced technologies can result in a more effective and efficient digital transformation, ensuring that healthcare processes genuinely add value for patients and improve the quality of services provided. Identifying root causes of problems on the ground with the people who deal with the processes, and not just through numbers, guided by the Voice of the Customer, and fully investing in Total Quality Management (TQM) are vital elements that position healthcare organisations to incorporate value into their processes safely and effectively using digital technologies, notably AI, ML, and robotics.



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¹ The word “gemba” is a Japanese term that means “the real place” or “the actual place”