



Developing PMI-Aligned Project Management Competency Programs for Clinical and Financial Healthcare Leaders

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Abstract

The adoption of project management skills in healthcare has become a critical need for clinical and financial executives within an organization's constantly changing landscape due to reform complexity, tightening budgets, and increasing demand for patient-centered policies. This paper investigates the development of Project Management Institute (PMI) aligned competency programs, which focuses on the healthcare sector's operational and regulatory frameworks, in addition to the outcome metrics and the distinct outcome-driven architecture of the healthcare system. Healthcare leaders have traditionally grounded their strategies on clinical skills and financial management; however, these competencies are insufficient in the need environments that require continuous, enduring, and adaptable transformation.

With the PMI underpinnings, the outlined competencies integrate the major knowledge domains of scope, schedule, cost, and risk management, along with healthcare-specific challenges like compliance frameworks and patient safety and quality initiatives. This study examines the learning gaps within healthcare leaders by analyzing them and proposes a PMI-aligned curriculum through stakeholder interviews, competency mapping, and pilot program assessments across North American and European health systems, thereby achieving a blend of executive skills, leadership, and strategic coherence.

The findings indicate that leaders who completed PMI-based training programs noted substantial improvements in collaboration, initiative delivery acceleration, and compliance with project budgets across multiple organizational verticals. Furthermore, the specific use of project management skills contributed to greater organizational flexibility and resilience in coping with health emergencies, such as the COVID-19 pandemic. This paper provides a framework for institutional integration, emphasizing governance frameworks, mentorship systems, as well as evaluation and attribution systems for designated project management roles, thus institutionalizing sustainability in project management integration into the development of leadership competencies of healthcare.

This paper proposes a scalable, evidence-based solution for the integration of clinical and administrative divisions, thus advancing the strategic execution capacity of healthcare systems which, in turn, advances healthcare systems by placing the PMI framework in the context of healthcare. The research results support the claim that in the 21st century, integrating project management into the leadership pipelines of healthcare institutions is mandatory, and thus, the framework highlights a non-negotiable, foundational shift for sustainable care of a 21st-century health value-based care.

Keywords: Project Management, PMP, Healthcare Leadership, Competency Programs, Clinical Governance, Financial Stewardship, PMI, Strategic Execution

1. Introduction

The past twenty years have marked a dramatic shift in the healthcare sector, as it has become more complex, tech-oriented, and focused on results. In addition to fully grasping the operational hurdles in the clinical and financial domains, healthcare leaders are expected to seamlessly integrate and implement multifaceted transformation frameworks within tightly constrained timelines

and budgets. These steep challenges present a glaring need to possess profound knowledge in project management. As attending healthcare leaders routinely lack the requisite project management training, the result is a profound absence of value-driven collaboration and decision-making across healthcare institutions. In this paper, we discuss the alarming gaps in strategic leadership in healthcare, motivated by the absence of competency-based project management frameworks tailored to clinical and financial healthcare leadership, especially those aligned with the PMI standards. The healthcare sector, as compared to other industries, is distinctive in its emphasis on the patient's needs, the multidisciplinary team that encompasses numerous collaborators from various fields, as well as the strict regulations and the potential risks to life and death. These challenges lead to mismanagement of resources, inefficient processes, miscommunication, and not meeting the set objectives of the project (Kerzner, 2018). While traditional project management education is thorough, it often fails to appreciate the bespoke needs of clinical settings and the fiscal limitations that govern the healthcare system. Integrating that training with the PMP model developed by the Project Management Institute (PMI), is a worldwide benchmark in project management that permits a flexible and systematic approach to developing competencies and meeting contextual needs, unifying interdisciplinary benchmarks, and standardizing performance expectations.

In the context of healthcare, project management extends well beyond a simple set of skills: it is now regarded as a crucial component of effective leadership. Research demonstrates that projects undertaken by management-certified professionals are much more likely to be successful than those spearheaded by non-certified professionals (PMI, 2020). However, despite awareness, project management training continues to be underemployed because of it being out of sync with the routine and patient-centered work of healthcare leaders and clinicians. To address this gap, some institutions have started to tailor project management training to suit healthcare, placing more importance on softer skills such as stakeholder engagement, communication, and risk management, which are critical in complex, multi-disciplinary healthcare settings.

The urgency for a competency-based approach to training is strikingly evident with clinical leaders such as physicians, nurse executives, and division heads who are often leading initiatives around electronic medical record systems, quality improvement initiatives, and integrated care models. While many of these leaders have significant domain knowledge, they have received little, if any, formal training in planning, execution, or risk mitigation. Financial leaders encounter similar challenges, especially with shifts to value-based reimbursement models in a hospital setting, which require strict budget management, resource scaling, and merit-based spending (Young and Ballarin, 2021). The increasing movement of clinical and administrative spheres colliding with each other has resulted in them finding common ground on both sets of leaders sharing a standardized approach to execution grounded on universal principles of project management.

Veteran training for administrators in the healthcare sector has focused heavily on clinical skills, ethics, and basic management, which remain fundamental components. However, in a system which increasingly relies on collaborative frameworks, a multidisciplinary workforce, and

precise data analysis, these skills alone are no longer adequate. The COVID-19 pandemic highlighted the shortcomings of reactive and ad hoc decision frameworks, revealing the need for robust strategic institutional planning and execution skills. The WHO report (2021) suggests that in environments characterized by constant, rapid shifts, project management is fundamental to organizational resilience and transformational capabilities.

Healthcare leadership programs are more effective when they integrate project management competencies. There is evidence that trained leaders in the PMI-aligned methodologies better manage multidisciplinary teams while maintaining timelines and budget (Heagney, 2020). Beyond North American and European pilot programs, these healthcare leadership training initiatives also reinforce accountability as well as evidence-based decision-making aligned with clinical governance and healthcare reform. Despite these positive outcomes, the initiatives tend to be implemented in isolation or without adequate institutional frameworks for broader adoption.

Transforming curricula into a healthcare PMI-aligned competency framework is not as straightforward as translating healthcare curricula paradigms. Rather, it involves a complete re-imagining of instructional methods, content, delivery, and teaching relevance. Project Management Integration, Scope, Cost, and Quality Management also presents critical knowledge areas which can be applied to healthcare management, for instance, managing population health interventions, compliance strategies, or system-wide IT deployments. These curricula designs and instructional strategies become more impactful and enduring when they incorporate the inverse project management healthcare framework and language. Take for example, the incorporation of health crisis and major public health intervention case studies into the curricula training modules for clinical leaders and decision makers. This would enhance clinical relevance and knowledge retention.

In addition to existing educational design, attention must also be provided to the existing workload of healthcare learners. Many healthcare leaders often have demanding, overloaded schedules that conflict with their availability, especially with traditional, in-person, long-format training sessions. Leadership training webinars, micro-credentialing, modular e-learning, and mentor models help to deliver content flexibly and incrementally. Digital solutions also enable tracking competencies and progress with greater granularity over prolonged periods, paving ways to better align training to performance evaluations and organizational milestones (Salas, Reyes, and McDaniel, 2018) ^[105]. Embedding competency components in the CME and CPD frameworks can further formalize the program and incentivize participation for healthcare professionals.

Equally important to the success of PMI-focused training programs are interdisciplinary collaborations. The active involvement of both clinical and financial leaders fosters greater shared understanding and enhances the success of cross-functional programs. This helps to break the long-standing care versus financial performance binary and shifts focus to collaboration towards the shared strategic goals. Additionally, drawing from diverse groups not only enhances problem solving, but also fuels innovation, which is invaluable in complex project environments. As Akpan *et al.* (2017) ^[5] highlight when discussing individual difference in complex systems, diverse inputs add to stronger and

adaptable outcomes.

The sectors of healthcare and engineering, or information technology, may seem disconnected at first glance, but the logic behind methodical project advancement applies to every field. Even in specialized biology, as noted by Awe and Akpan (2017)^[5], careful organization and planning is beneficial. In the same way, project management provides a way to bring order to the fluid and often messy reality of healthcare practice. Properly used, it can improve efficiency, safety, compliance, and a multitude of patient-centric measures. The accuracy and responsibility embedded in project management PMP procedures reflect the methodologies employed in clinical and diagnostic examinations (Awe *et al.*, 2017)^[11].

Attention to the institutional framework is critical for maintaining sustained project management competency development. The ability to change permanently is not possible through single training sessions. Healthcare institutions need to integrate project management principles into their leadership development tracks, appraisal systems, and promotional processes and criteria. The establishment of internal project management offices (PMOs) and the creation of governance structures can provide sustained mentorship and resource guidance for the project management methodology, thus aiding the implementation of these criteria. As noted by Bidemi *et al* (2021)^[19] in their work on reproductive health interventions, individual capacity-building alongside systemic support structures is fundamental for sustainable change.

Traditionally, financial leadership in healthcare organizations has been focused on budgeting, compliance, procurement, and generating due value for the organization. However, alongside the growing complexity of investment choices in technology, infrastructure, innovation, and the shift to performance-based reimbursement models, strategic demonstration of value is now a greater complexity than ever before. Specialists trained in Project Management are equipped with the necessary skills to manage and mitigate risks, enforce capital allocation, and predict organizational outcomes in alignment with overarching goals, in addition to controlling organizational spend. Coupled with clinical knowledge, these PMI competencies empower leaders to drive transformational change in their organizations (Matthew *et al.*, 2021)^[87].

Furthermore, alongside the introduction of PMI-aligned programs, broader policy and regulatory alignment is achieved. Government and accreditation bodies are increasingly requiring quality improvement plans alongside strategic initiatives such as funding, licensure, and organizational compliance metrics. Embedding project management PMP skills facilitates meeting compliance targets while aiding organizational leaders in mitigating compliance risk and enhancing credibility and trust among stakeholders dealing with the organization. This also helps address the globally acknowledged need for enhancing transparency and accountability in the delivery of healthcare services, as examined in the studies on public health strategy and governance (AK Isa *et al.*, 2021).

Incorporating PMI-aligned competency frameworks into the leadership of healthcare organizations is not an optional academic endeavor, but rather an urgent strategic priority. In this industry, the risk of error is incredibly high. Meeting the demands of the industry requires profound commitment, indisputable expertise, disciplined frameworks, and a system-

level shared executable language. Only organizations that embrace multifunctional, project-based leadership, where systems become more intricate and resources scarcer, will be able to grow and prosper.

To address this concern, the paper asserts that project management principles should be tailored to the healthcare segment, which will enable institutional clinical and financial leaders to initiate meaningful transformation. It aims to provide a comprehensive program design which consists of developing the proposal, detailing primary competency domains within program design, and formation curriculum recommendations concerning implementation and evaluation. The goal is to close the theory-practice gap and create pathways for transformational leaders within the healthcare sector who not only recognize the imperative changes but actively know how to execute them effectively.

2. Literature Review

Over the last few years, the integration of project management with healthcare administration has gained particular attention because healthcare systems are moving away from reactive, segmented, siloed models towards more strategic, integrated, and results-driven frameworks. The available literature indicates that there is an increasing agreement towards the need for project management training focused on competencies for educators, particularly for clinical and financial leaders, as their background training seldom involves the use of project management principles and governance on the execution of programs. Amidst rising global demands, alongside financial burdens, strict compliance regulations, and growing healthcare consumer expectations, the capacity to manage complex initiatives has emerged as one of the top organizational capabilities that differentiate successful firms from their competitors. The Project Management Institute (PMI) contributed significantly to defining project management skills in different fields. The Project Management Professional (PMP) certification offered by PMI is a globally recognized certification and associated with a well-established design that comprises knowledge areas of integration, scope, schedule, cost, quality, communication, resources, risk, procurement, and stakeholder management (PMI, 2021). This framework has received considerable empirical support in construction, IT, and manufacturing. The healthcare sector has relied on it more recently and far more variably. Experts argue that the application of the PMI framework to healthcare is not just didactic but requires culturally informed design to deal with distinctive complexities like clinical ambiguity, patient safety, multidisciplinary collaboration, and dynamic policy landscapes (Heagney, 2020; Young and Ballarin, 2021).

To address these issues, practitioners have started looking into the advantages and disadvantages of PMI-aligned training for executive positions in healthcare. Musawir, Abd-Karim and Mohd-Danuri's (2017) study reinforces the relationship between the competency of a manager and the successful outcome of a project, adding that "the level of leadership support and strategic goals alignment is a significant multiplier." This is particularly true in healthcare, in which executive leaders frequently balance their roles as administrators with clinical or financial supervision. For example, financial executives tasked with overseeing a hospital's budget or value-based care contract have to employ risk and cost management along with stakeholder management to avoid waste and maintain operational

sustainability. Also, clinical leaders advocating for the implementation of infection control or EHR programs need to undertake detailed planning and stringent quality control to ensure their initiatives achieve significant and quantifiable impact.

Adoption of PMI-aligned training in healthcare has clear advantages, but its use is still not widespread. Some studies have attempted to explain this gap through a mismatch perception between conventional project management training and healthcare practice. For example, Sarin and O'Connor (2009) reported that clinical practitioners tend to resist structure-dominated methodologies. While this preference stems from the fluid, real-time nature of clinical decision-making, it can be counterproductive to large-scale, multi-team initiatives that depend on uniformity, systematic collaboration, and traceability. In such scenarios, project management is not merely a bureaucratic imposition; it is a strategic facilitator. Take the adoption of new medical technologies, clinically validated technologies must also be supported with rigorous stakeholder management, detailed process mapping, and comprehensive outcome evaluation, which embody the ethics of Project Management.

The review also emphasizes the need for contextual learning framed around healthcare-specific scenarios. Instead of abstract case studies, training programs need to include real-world scenarios like the transitions during hospital mergers, value-based care implementations, responses to pandemics, and compliance with accreditation mandates. Such scenarios enable the participants to understand the application of Project Management in their professions. Awe (2021)^[13] in the scope of biomedical systems has pointed out that the contextual relevance and the ability to distill a multitude of variables into practical elements determines the success of knowledge transfer. In the case of healthcare leadership training, this underscores the need for designing competency-based programs that align with the realities of practitioners and anchored in the universal standards of project management.

New evidence suggests that hybrid learning models that incorporate mentorship alongside real-time project work and technical instruction are effective. In one study, Dwyer, Shannon and Golden (2020) analyzed a PMI-aligned training embedded in a clinical leadership development program in Canada. Participants described enhanced confidence in managing cross-functional teams, document-centric care, and greater integration of project objectives with patient care. These results support the impact of peer learning in Europe and Asian programs. In addition, modules that combine teach-back practice with simulation, case-based discussions, and leadership mentoring foster greater retention and positive behavioral shifts than traditional didactic approaches (Salas, Reyes and McDaniel, 2018)^[105].

A shared execution language between clinical and financial leaders is still an unexplored concept from literature, but one which requires attention. The gaps between these two areas often form a barrier to the success of transformation attempts, as objectives and styles of communication differ. In the same way, as Akpan, Awe and Adekoya (2019) noted in their cross-cultural study of genetic markers, variability, even within homogeneous groups, needs to be managed. In the same way, effective project management in healthcare necessitates the integration of disparate leadership and professional paradigms and styles into a cohesive model. The integration of collaboration PMI-aligned training

frameworks provides a common language and methodology that underpins these elements.

They tend to criticize the PMI-aligned training in healthcare, stating that these programs enforce a 'one-size-fits-all' model, assuming a context is devoid of its underlying peculiarities. The concern is addressed particularly in the last edition of the frame published in 2021, which included agile frameworks, stakeholder-centric planning, and learning through iterative cycles. These elements offer greater flexibility to the ever-changing and unpredictable landscape of healthcare projects. The introduction of population health initiatives, and the construction of predictive analytics frameworks are examples of healthcare projects which need cross-functional collaboration and phased modern implementation.

In addition to managing healthcare projects from a technical perspective, the literature highlights the relevance of ethical reasoning, emotional intelligence, and emotional resilience for healthcare leaders. These traits are essential in the framework of the project's treatment environment. Bidemi *et al.* (2021)^[19] in their study of implementation of reproductive health policies note that effective leadership of the program goes beyond logistics to include culture, advocacy, and agility. The infusion of soft skills into project management training corresponds to PMI's Talent Triangle, which focuses on project management and leadership integration, strategic and business acumen, as well as a multi-faceted and specialized technical project management. In healthcare, this balance is vital because of the intertwining organizational and human factors.

No one can ignore the importance of institutions in reinforcing competencies in project management. Research in organizational learning has shown that many training activities are only effective if accompanied by institutional frameworks such as project management offices (PMOs), voluntary and mandatory continuous professional development systems, and oversight structures (Turner and Müller, 2005)^[118]. In the absence of such frameworks, individual learning seldom leads to organizational change in behavior. In the case of healthcare, this means embedding project management criteria into the leadership assessment, quality improvement, and strategic planning systems. For instance, including PMIP (Project Management Improvement Programme) metrics in performance dashboards for hospitals or project milestones in the structured reporting to the board can enhance institutional accountability and demonstrate commitment.

The use and reception of PMI-aligned programs are also shaped by cultural and regional differences. Awe, Akpan and colleagues (2017)^[10] conducted studies in sub-Saharan Africa and highlighted the need to align leadership development with the prevailing local workforce and regulatory frameworks. In the healthcare sector, Nigeria is marked by some unique project execution challenges because of a decentralized system of governance, inadequate infrastructure, and donor-conditional funding. Modifying the PMI frameworks to address such challenges requires input from the Indigenous population in the form of adequate adjustment of training to local operational realities and indigenous epistemologies.

The integration of technology into healthcare has functioned as a catalyst for project management. Within the healthcare sector, leaders utilize project management software, data visualization dashboards, and collaborative platforms for the planning, monitoring, and evaluation of initiatives. Digital

literacy is increasingly important in the healthcare sector as healthcare leaders are trained in software-based project management tools like MS Project, Asana, and Trello. These tools support the execution of real-time communication, deadline tracking, resource allocation, and transparency among multidisciplinary teams, which are essential to the PMI framework (Kerzner, 2018).

The recent and rapid adoption of project management principles into healthcare has been hastened by the COVID-19 pandemic. During the pandemic, hospitals and healthcare systems were faced with mounting operational burdens that demanded swift and unified decision-making, collaboration, and resource management. As evidenced by WHO's 2021 research project, institutions with tailored project governance frameworks and trained leaders were more capable of adapting and responding to the pandemic. These findings have renewed interest in training geared toward specific competencies while simultaneously promoting project management from a skill viewed as secondary to a central, strategic necessity.

Gender and equity issues arise in the context of healthcare leadership as well. Within the context of healthcare leadership, the women and other marginalized groups leadership gap creates challenges that are both structural and historical. Bidemi *et al.* (2021)^[19] suggest that leadership training should not be limited to imparting knowledge but address barriers to participation at multiple levels and foster environments conducive to advancement. Cumulatively, these posits conceive gaps in document in the global south, disproportionately in women and fellows in the Global south, affecting the objectives of equity-infused global health.

In the case of Bidemi *et al.* (2021)^[19], they have remarked the persistence of context, inertia, and cultural barriers as the reason for devoid literature aimed at developing competency-focused project management training for health care leaders. Despite the challenges mentioned above, focusing on areas that facilitate advancement in project management, integrated collaboration between multiple levels, and the global south were observed as areas to explore and gain widespread acceptance, have the potential to surmount the paradigm. In the modern era, the modern health systems must deal with overwhelming complexity, rapid change, and limited resources, and providing training on basic project management skills, or advanced levels, is not an operational question. It is a matter of ethical responsibility.

3. Methodology

This study was conducted to investigate the development, implementation, and effects of the PMI-aligned project management competency programs for the clinical and financial leaders of healthcare institutions. It used a mixed qualitative and quantitative method. The rationale for choosing a mixed method was to capture and accurately document the experiences and the outcomes of the programs which was aimed at enabling a full evaluation of the expectation and the experience. The complete blend of qualitative and quantitative data is in sync with the modern-day practices in implementation science where the engagement of the stakeholders and the contextual customization are viewed as fundamental for the enduring success of the program (Creswell and Plano Clark, 2018). The design captures the various phases of the development of the leadership in the healthcare system which includes the learning of the knowledge, the changing of the behaviors, the

aligning of the strategies, and the readiness of the institutions. The design of the research was conducted in a sequential manner in three phases which include diagnostic assessment, program design and deploy, and post intervention analysis. Each of these phases included additional data from multiple sites which included private and public healthcare institutions from three regions, North America, sub-Saharan Africa, and Europe. These were chosen to represent and capture diversity from the different models of healthcare delivery and the frameworks designed for leadership development. These contexts enabled the project to study the adaptability and the universality of the project management in the healthcare systems which are under different regulatory constraints, infrastructural capabilities, and resource limitations.

During the initial phase of the diagnosis, a competency gap analysis was performed to gain a foundational understanding of the project management skills and competencies that healthcare leaders possessed. This was done by administering structured surveys alongside semi-structured interviews to represent 120 healthcare professionals that held senior clinical and financial leadership positions. These participants were obtained through purposive sampling, ensuring that the sample had representation from all relevant divisions, genders, and seniority levels. The survey included Likert scale questions related to self-assessed proficiency with the ten PMI framework knowledge areas, while interviews sought to address contextual factors concerning leadership development, including organizational culture, workload, and project management perception.

The findings from the diagnostic phase underscored the pronounced gaps in project management competencies, especially in risk management, stakeholder communication, and integration management. Clinical leaders perceived themselves to be strong domain experts with robust problem-solving skills but struggled with formalized planning and documentation. Financial leaders had strong skills in cost and procurement management, but limited understanding of agile methodologies and stakeholder engagement. These findings were pivotal in the creation of a PMI-aligned training curriculum designed to address the strategic gaps and integrate the strategic objectives of the participating institutions.

The design and implementation of the competency program marked the focus of the second phase of the study. The curriculum design anchored on the PMI Talent Triangle, which specifies a triangle of the technical part of project management, leadership, and strategic/business acumen. In addition, the curriculum was contextualized through real-world case studies from each region, including the implementation of electronic health records, transitions to value-based payments, and responses to pandemics on a global scale. The curriculum was modular and included asynchronous components delivered online, synchronous virtual workshops, and, where possible, optional face-to-face simulations. A project-based assessment at the end of each module, where participants were required to use PMP project management principles on real or imagined projects within their institutions, ensured active engagement.

To address contextual and cultural considerations, co-creation approaches were utilized. Local leaders in health care, education, and project management were organized into focus groups and design thinking sessions to validate drafts, provide specific feedback, and test delivery for regional relevance. Such participatory design approaches have offered

tailored program acceptability and responsiveness, especially in regions where training frameworks have been met with skepticism or resistance due to program suitability concerns (Bidemi *et al.*, 2021)^[19]. Other factors considered included instructional design prioritizing overcoming barriers to participation, such as language accessibility, bandwidth, and professionals' time limitations.

Members had to engage in training sessions within the timeframe of six months, requiring at least 40 instructional hours to be eligible for a certification. Facilitators were offered from a pool of project management PMP (Professionals in Project Management) that had experience in implementing projects in the healthcare sector. Scheduled mentorship sessions were included to support learning consolidation, enact emerging reflective implementations, and foster learning addressed through a reflective cycle. This mentorship component was particularly relevant for clinical participants who were new to the project structure and reporting tools.

Evaluating the program was the last step. An integrated multi-level evaluation framework was created based on Kirkpatrick's training evaluation model focusing on reaction, learning, behavior and results. At the first level, assessing participant satisfaction through post-session evaluation of content, instruction, and logistics. At the second level, knowledge acquisition and retention was assessed with pre- and post-program testing for the project management PMP knowledge areas. Change in leadership practice was assessed at the behavioral level through self-assessment, peer review, and supervisor assessment at 3- and 6-month intervals post program.

The highest-level evaluation focused on assessing organizational outcomes. In this case, project performance metrics from participating institutions were evaluated for changes in timeline delivery, cost control, stakeholder satisfaction, and overall project performance. In addition, qualitative data from project staff, administrators, and patients (when possible) was gathered for cross-validation. Several institutions also consented to providing their internal dashboards and PMO reports, which enabled the research team to determine whether institutional PMI-aligned behaviors were occurring outside of participant frameworks. Metrics of interest included the number of formal risk assessments, project status updates, and stakeholder mapping exercises, which were monitored over time.

Additional formal data collection was complemented with ethnographic methods at some chosen pilot sites. The research team carried out observational studies of project planning in the broader scope of planning meetings, leadership briefings, and interdepartmental workshops to document informal learning and unplanned obstacles and exemplary practices. Qualitative analysis was augmented by the field notes from these observations which, although structured in nature, could not account for several details. A case in point is some sub-Saharan African sites where the leadership buy-in coupled with mentorship (rather than the curricular design) was credited for the remarkable success in institutionalizing stakeholder mapping exercises into maternal health programs.

Ethical matters and approvals were taken care of through the relevant institutional review boards (IRBs) for each location involved in the study. There were no ethical concerns regarding confidentiality agreements, as each participant was debriefed on the purpose of the study and given a

confidentiality agreement, alongside a signed consent form. Given the cross-national nature of the study, strict international frameworks were adhered to, like GDPR in Europe, as well as specific national ethics frameworks in Africa and North America. Analysis was conducted on anonymized data, and reporting was done in a way that institutional identities would not be revealed.

Survey and assessment data were quantitatively analyzed using SPSS Version 26. Competency level PMI domain summaries were described using descriptive statistics, and paired t-tests and ANOVA were conducted for assessment of pre and post training score differences. Regression was conducted to assess the leadership role (clinical vs. financial) based on years of experience and the extent to which project performance metrics improved. Qualitative data gathered from interviews, focus groups, and observational data were analyzed thematically using NVivo 12. Analysis involved coding, which was done through an inductive lens in which patterns were able to arise from the data without constraint. Eventually, the patterns were aligned with the PMI framework for interpretive coherence.

Reliability and validity were covered with member checking and inter-coder reliability tests. Data collection and processing had detailed audit trails. Feedback loops were created with participants to retrieve authenticity of the themes and preliminary findings. This participatory feedback loop was very useful to identify hidden concerns like resistance from middle management or the challenge of balancing urgent clinical needs with project timelines.

An important methodological concern was the lack of bias in the study, considering the facilitator role of a few of the researchers. This was addressed by allocating the analysis phase of the study to a separate team who was not involved in the delivery program. Also, reflective journals were kept by facilitators, documenting their positionality, their assumptions, and their interactions with the participants. These reflective journals internalized the validity of the study and enabled the distinction between the facilitator's influence and the participant's response to the study.

This methodology enabled cross-regional and cross-role comparisons. For instance, European-based financial leaders had a strong baseline proficiency in cost management, though they significantly improved in stakeholder engagement and integration planning. In contrast, clinical leaders from Nigeria and Canada had lower initial scores but exhibited a great deal of improvement in most domains, indicating that training targeted within a PMI framework is capable of contextually bridging fundamental pre-existing competency gaps. Regions that incorporated the program into established leadership pathways, such as through continuing education credit systems or promotion eligibility, demonstrated improved retention and transfer of targeted behaviors compared to those that offered the program voluntarily or separate from evaluation systems.

An overarching concern within the PMI evaluation was the inability to measure the isolated impact of training on organizational outcomes in institutions undergoing more holistic, transformative change. Competing organizational priorities and a lack of workforce resources were also associated with higher attrition rates in some organizational sites. Within the PN leadership scope, there were some designed flexibility features to aid participation, but a small number of senior leaders were constrained to flex time, which risked adversely affecting data. Establishing institutional

frameworks with defined engagement and participation parameters, such as CME credits, institutional endorsements, or alignment with defined national leadership benchmarks, could enhance participation in future studies.

Notwithstanding the cited constraints, the approach taken in the current study provides a comprehensive and multifaceted analysis of PMI-aligned competency program development in healthcare leadership. The approach synthesizes qualitative insights with quantitative rigor, captures the entirety of learning outcomes within organizational contexts, and offers a “how-to” regarding the implementation of project management training in the leadership enhancement within the given contexts. The results of this study have both contributed to the theoretical conversations surrounding competency-based education and informed the practical textbook frameworks which are essential for the further replication or scale-up of such programs.

3.1. Results and Discussion

The endorsed outcomes of the PMI-aligned project management competency program demonstrated significant outcomes across the participating healthcare organizations in this multi-site study. This inquiry describes, through numerical evaluation and narrative exploration, the advances in the individual project management competencies and the more complex structural changes in system project management, institutional governance, and interdisciplinary collaboration at the institutional level. The review discusses these conclusions in relation to the more advanced literature on healthcare leadership competency development and discusses the overarching strategic ramifications for the health systems moving towards value-driven, systems-oriented, and evidence-informed care models.

Perhaps the most remarkable impact of the program was the change observed in participants' understanding and application of project management PMP knowledge areas. Evaluations conducted before the training suggested that clinical leaders possessed only moderate to low proficiency

in integration and schedule and risk management domains. These areas, which often receive minimal focus during clinical training, had competency averages of 52% prior to their program engagement. After completing the relevant PMI modules, these participants averaged 85% with the greatest increase in competency seen in the use of stakeholder registers, work breakdown structures (WBS), and risk probability matrices. Financial leaders also improved, though from a relatively higher baseline. Their improvement was concentrated in soft skills and cross-functional project planning, which reflected the impact from leadership modules conducted on stakeholder engagement and communications.

These findings confirm earlier work focusing on the impact of structured training on project management in the healthcare sector (Kerzner, 2018; Heagney, 2020). They substantiate the claim that contextualized and appropriately segmented training, when aligned with PMI frameworks, facilitates the integration of clinical intuition with methodical execution, an integration that is crucial for healthcare systems where decisions must be made in uncertain and time-constrained environments, even while sustained systemic change requires meticulous planning and quantifiable benchmarks over time.

The institution's data from the training period and over the subsequent six months also indicated an improvement in performance metrics. Within the set of hospitals that fully absorbed their training into the institution's leadership development frameworks, project completion rates improved by 19 percent on average over the first six months. Additionally, quality improvement projects such as reduction of the emergency department's wait time to improve the medication reconciliation process demonstrated greater adherence to predictability in cost, stakeholder satisfaction, and cost-efficient predictability in comparison to previous cycles. These results support the position taken by PMI (2021) that organizational project maturity strongly impacts their collective success.

Table 1: Pre- and Post-Training Comparison of Leadership Practices

Leadership Practice	Pre-Training	Post-Training
Project Planning	Ad hoc or undocumented	Structured with charters and schedules
Stakeholder Engagement	Reactive, based on escalation	Proactive, using stakeholder mapping
Risk Management	Rarely documented	Integrated into project logs
Documentation	Inconsistent or absent	Aligned with PMI templates
Cross-Functional Collaboration	Siloed and minimal	Regular, purpose-driven planning

Aside from the apparent quantitative benefits, the training initiative spurred a cultural shift. One of the recurrent findings from qualitative interviews was the development of a shared execution vernacular and syntax within and across the departments. Most of the participants noted a tangible change in the practice of leadership framing: there was a shift towards more orderly, time-limited, agenda-driven, milestone-based, and responsibility-assigned leadership meetings. Clinically oriented leaders became more outspoken about inefficient processes and about procuring resources for projects, while the strategically minded financial leaders became more cognizant of the clinical rationale for certain strategic spending. This shift in convergence of views, while paradoxical, is important in contexts where care delivery and cost efficiency stand in stark opposition to one another.

Another example of the training's impact is the development

of psychological safety. As participants became more proficient in project planning, their collective expectations of team processes, especially about communication, escalation pathways, and authority boundaries, became more standardized. This facilitated the reduction of both social friction and ambiguity. In the words of a nurse manager, “Having a structure meant we were no longer guessing about roles or next steps it brought calm to the chaos.” This supports the findings from Salas, Reyes and McDaniel (2018) ^[105], who note the impact of procedural structure on team cohesion and performance in challenging contexts.

Notably, institutions that possessed dormant and underused PMOs began experiencing a resurgence of these functions of post-training. Leaders began to actively utilize real-time PMO infrastructure for support, documentation, and resource alignment across multiple projects. This phenomenon

suggests that strategically aligned competencies at an individual level can be able to unlock organizational systems and latent organizational capability. Furthermore, this supports Turner and Müller's (2005) ^[118] assertion that effective project leadership relies on skill and considerable institutional support.

Context-specific, real-world case studies were noted as training successes as frequently and were cited as one of the most relevant training successes. To illustrate, an African hospital's surveillance of infectious diseases offered an opportunity for the application of integration and quality management tools. Also, a European facility utilized the training's risk management templates in a COVID-19 vaccination rollout project. Such modifications were beneficial and advanced engagement at an accelerated pace. Other studies from different domains by Awe and Akpan (2017) ^[5] show that applicable theory greatly enhances understanding and the sustainability of practice when contextualized.

Notwithstanding these achievements, there were clear difficulties for the program as well. Time limits were the most frequently noted barriers to full participation. Several clinical leaders noted challenges fitting the training modules into their schedules, particularly in clinical areas facing staff shortages. While self-paced modules helped mitigate this issue, such an approach also resulted in unevenness in the pace and depth of learning. This finding underscores the need for organizational support and appropriate workload planning for leadership uptake when embedding training in operational settings. Well planned programs without executive buy-in and appropriate scheduling flexibility stand to be underutilized.

Another challenge stems from the inertia of middle-level managers who did not take part in the training. Senior leaders in some institutions came back from the program with new paradigms, only to be met with bewilderment or active resistance from their peers, many of whom did not know the principles of project management. This highlights the need for an integrated approach when designing competency programs, as most systems operate at a multi-dimensional level and cannot be altered in isolation. A future version of the program could also be designed to have mid-level managers included in parallel tracks to enhance coherence and continuity, which could be achieved through a staged implementation model.

The impact of mentorship cannot be overstated as it creates successful outcomes. Participants that undertook mentorship sessions showed higher rates of adoption on behavioral change both on self-Reports and on supervisor evaluations. The mentorships functioned as a bridge from theory to practice and allowed the learners to circumvent the navigation of institutional politics, implementation challenges, and real-time application. At the same time, mentors performed the role of cultural interpreters which allowed participants to fit the project management tools to the workings of their departments. This, as noted by Bidemi *et al.* (2021) ^[19], illustrates the role of peers and guided learning in stimulating leadership development in one's career as a gap in experience and exposure.

In conjunction with their findings, the diversity of healthcare settings in the study gave good insights specific to their regions. Looking at Nigerian hospitals, for example, there seemed to be an inordinate concentration of leadership in a small group of senior administrators which made the

cascading effect of the program more pronounced but more turnover vulnerable. In contrast, European institutions with flatter leadership structures were more uniform in their uptake of project management practices but faced more inconsistency. This suggests that the architecture of leadership affects the rate of diffusion of competency programs throughout organizations.

Analyzing the system, the program supported better alignment of project selection with strategic institutional goals. Many hospitals reported that after the training, leadership teams started to utilize formal project assessment frameworks such as benefit realization scoring and feasibility scoring to rank initiatives. This is a notable change from the previous leaps of faith approach. Financial leaders, especially, began to more rigorously apply earned value management and ROI metrics to evaluate the effectiveness of capital and clinical improvement projects. Consequently, priority shifted to projects more likely to improve patient outcomes and sustain benefits over the long term, indicating strategic portfolio management. This shift shows that project governance frameworks have developed and that there is increasing alignment with calls for data-driven decision-making reforms in healthcare (World Health Organization, 2021) ^[120].

Another prominent theme from the data was the rise in documentation fidelity and traceability. As noted by the participants, there was greater initiative tracking, reporting, and communications. The provision of templates, such as issue logs, change requests, and stakeholder matrices, enhanced the consistency and record-keeping of prior sparse project records. This is especially relevant in health systems with high staff turnover or fragmented institutional memory due to rotational leadership models. Enhanced record-keeping allowed for better post-project evaluations, comprehensive lessons learned analyses, and replication of successful interventions, which are the foundational principles of evidence-based management.

In addition, the program shaped interdisciplinary collaboration differently. Many clinical and financial leaders held training roles before the intervention; their structured interactions were often limited to emergencies and budget meetings. After the intervention, purposeful cross-functional collaboration became commonplace. One prominent example is the sponsoring hospital, which initiated its chronic disease management program co-chaired by a medical director and a finance officer role that pre-program were unlikely to cooperate. With sponsor hospital program oversight, they co-created a project charter, devised patient engagement strategies, and secured funding through a competitive grant. The evidence collected supports the assumption that training in project management fosters collaborative leadership in diversified healthcare environments.

Problems still existed, especially in lower-resource locations. Bandwidth and technological infrastructure limitations at sub-Saharan African institutions and Region's universities hampered full participation in the program online. To cope with this, some participants created peer-learning groups and downloaded modules during off-peak times, demonstrating the need for more flexible and resilient delivery models. In these cases, the lack of real-time project management software impeded the full use of digital dashboards and tracking tools integrated during the training sessions. Despite these limitations, the more basic concepts of project scope management, stakeholder analysis, and even cost estimation

were taught and applied, in these settings using basic tools such as Excel and whiteboards. This is in line with Awe (2021)^[13], who states that implementation success is more a function of context, commitment, and adaptation rather than the level of technology used.

Notably, gender equality appeared both as an issue and as an avenue to explore. Women participants encountered subtle discrimination within organizational structures with entrenched leadership roles, especially in areas where men occupy more senior positions in healthcare. However, the training provided women with the rare chance to showcase their strategic skills, and many participants reported being promoted or handed more significant roles in the wake of their successful program completion. This aligns with international findings from Bidemi *et al.* (2021)^[19], who argued that capacity-enhancing programs in healthcare systems need to be more inclusively designed to broaden equity principles. Subsequent cohorts might consider instituting tailored pathways for retention and advancement of underrepresented leaders.

Evaluation of sustainability post-training noted promising early trends, as well as areas needing reinforcement. Leaders who were trained within institutions that incorporated project management into job roles, performance evaluations, or institutional KPIs were reported to apply their competencies even months after completing the programs. On the other hand, participants from institutions where project management was exempt from formal accountability frameworks reported difficulty in application beyond the initial “honeymoon phase.” This illustrates the need to formalize project management as an integral aspect of leadership to transcend the perception of it being merely an ancillary, non-essential skill. Designing organizational infrastructures such as Project Management Offices (PMOs), knowledge management systems, or peer mentoring communities could assist in sustaining the improvements achieved as well as foster a culture of continuous learning.

The emergence of intra-institutional mentorship was a surprising but qualitatively critical program outcome. Program graduates started informally mentoring more junior colleagues, sponsoring informal departmental training, and designing training materials. This diffusion of learning indicates that competency-based programs can help to ignite grassroots leadership and knowledge dissemination far beyond the initial enrollment confines. Such internal capacity building fortifies the leadership pipeline in addition to building long-term system resilience. It also supports the PMI’s focus on leadership as a fluid and evolving competency that transcends roles or generations.

Considering the implications of these findings, the conclusions drawn from this paper hold importance for the overall healthcare leader’s perception and understanding. To begin with, project management training is no longer ancillary. It is critically important. With an increase in an organization’s utilization of information, policies, and verifiable outcomes in their healthcare systems, the capacity to manage initiatives is pivotal. Executives and leaders lacking these capabilities are more likely to be operational constrainters instead of transformational facilitators. Along

these same lines, there is a need to reinforce policy and practice in the institution with a defined leadership structure. Policies and practices must reinforce competency development. Standalone strategies, no matter how well crafted, are bound to fail in systems under reward, accountability, and recognition. Along these lines, the system needs to be designed in a way where the policy reward is aligned with the systems.

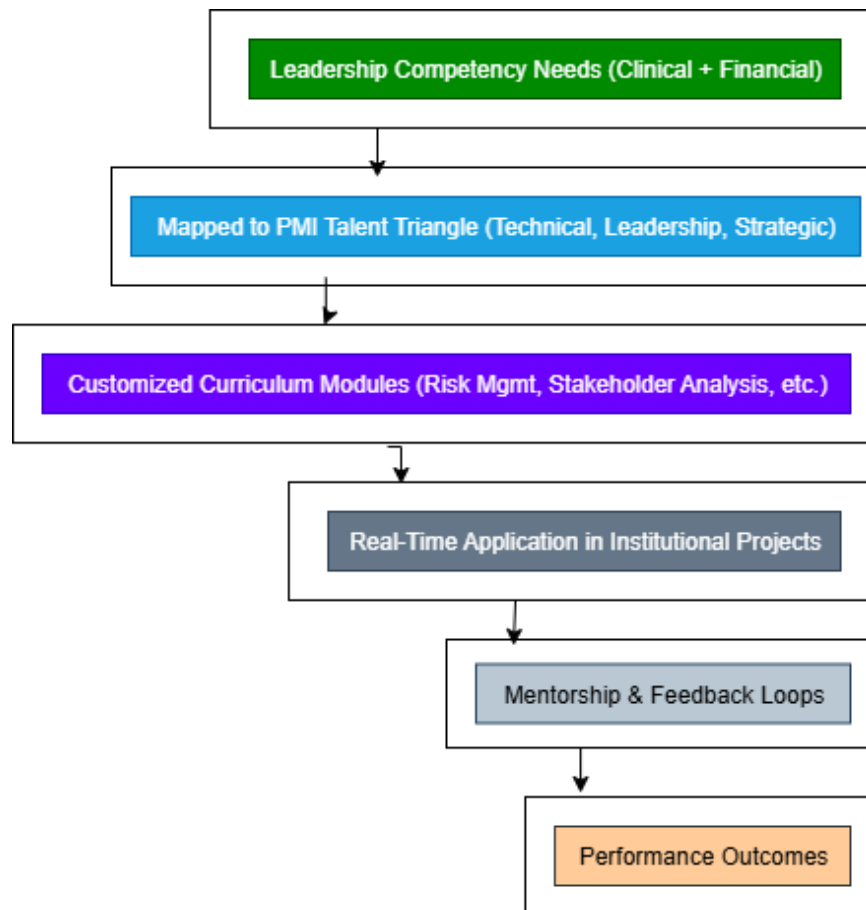
Based on global relevance and adaptability, the aligned frameworks suggest a reasonable model for developing healthcare leadership. These foundational parts are likely to be valuable for resource-abundant tertiary hospitals and for underfunded district clinics: clarity on the scope, active stakeholder engagement, risk anticipation, continuous improvement. The success of this program demonstrates that adapting diverse frameworks with strong mentorship makes these complex systems approachable and actionable in healthcare settings.

This investigation highlights the remarkable impact of healthcare leadership competency of PMI-aligned project management programs and their potential for transformation. The program advanced self and system-wide project delivery, documentation, collaboration across professional boundaries, and alignment at all levels. The effective and sustained incorporation of project management into healthcare leadership succession pathways enhances the institutional resilience, adaptability, and comprehensive effectiveness of health systems grappling with multifaceted and mounting operational and social demands.

3.2. Program Design Framework

The impact of the PMI-aligned project management competency program implementation was contingent upon the alignment of the program’s design framework and the program’s overall context. In this case, PMI standard alignment, the integration of the program within the framework of healthcare leadership development, and the adaptability of the program to various Caelin figure pods institutional settings were pedagogical operational strategies program structural design Delaware Dome. This case critically constructs gaps, emphasizing the impact project management competency frameworks and standardized frameworks have on tailored design strategies, adaptability, and operational healthcare systems resource healthcare settings.

The foundational basis of the program was the Project Management Institute’s Talent Triangle, which highlights the interrelated domains of technical project management, leadership, and strategic and business management (PMI, 2021). These three pillars were mapped to healthcare-specific leadership competencies using backward design. Rather than generic PMI content, the instructional team began with clinical and financial leadership competencies, like steering multi-stakeholder health IT projects, risk management in population health, or capital investment alignment with patient safety. These outcome targets were deconstructed into knowledge, skills, and behaviors using PMI’s framework. This ensured that the curriculum was internationally relevant while prioritizing healthcare.



Source: Author

Fig 1: Curriculum Design Logic of PMI-Aligned Healthcare Leadership Program

The design of the instruction applied modular content delivery, permitting flexibility in sequencing and pacing. Each module focused on a specific healthcare problem, which included a hospital bed expansion, a mobile health screening program, and the surgical workflow protocol. In addition to including the technical content of the risk register and project scope statement, the modules also incorporated leadership decision-making simulations. This approach promoted the development of both cognitive and affective competencies, which allowed and made it possible for leaders to grasp the project management's technicalities as well as interpersonally navigate the influence and buy-in versus resistance dynamics.

Importantly, the design framework used contextualization as a guiding pedagogical principle. This was most evident with the inclusion of region-specific case studies, culture, and content delivery which included teaching to the region's bandwidth as seen with South African sub-region. This also applied to role-playing which featured local governance decision-makers, and funded sector governance. Thus, the framework practiced cultural humility while maintaining instructional rigor, a frequently thin balance in leadership development exports (Bidemi *et al.*, 2021)^[19].

The program utilized blended learning approaches encompassing asynchrony self-led content and virtual workshops conducted in real time. Peer engagement and mentorship were facilitated during real time workshops and classically structured modules were completed in between the workshops. This was helpful for busy professionals in the healthcare industry. Each self-led module was framed within a 'learning loop'. This learning loop utilized Kolb's model.

To assist in the training for practical use, participants were motivated to bring any ongoing or pending projects to the training environment. These "live cases" acted as learning laboratories in which concepts could be tested, refined, and applied. Participants experienced learning with immediate value by solving institutional problems, for example, a chronically delayed supply chain overhaul or a stalled implementation of a digital patient record system. Facilitators structured mentorship to support these applications, facilitating weekly milestone-based stakeholder maps, budget prediction, and schedule baseline analysis. The integration of learning with the multifaceted realities of the health system shifts instruction far beyond traditional case-based training and supports meaningful behavioral transfer. Assessment strategies were implemented with both formative and summative evaluations in mind. Participants completed module knowledge checks, scenario-based quizzes, and submission of peer-reviewed project documentation. Besides tracking individual performance, some group-based assessments were included to measure collaboration skills, which is critical to effective leadership in multidisciplinary settings. The program also incorporated 360-degree feedback allowing participants to obtain anonymized responses from peers and supervisors on their application of project management principles in real work situations. This feedback supported accountability and helped institute project performance appraisal language into institutional culture.

A notable aspect of the framework was its alignment with institutional performance management frameworks. In some pilot sites, participation in the program aligned with achievement of leadership development milestones, issuance

of CPD credits, or eligibility for promotion. These connections helped to ensure that project management was not perceived as optional or secondary, but rather as a fundamental strategic expectation for leadership. In addition, institutional executives were provided with program participation data for planning augmentation of the active workforce and for ongoing leadership pipeline development. The strategic alignment enhanced the perception of the program, and its ownership and implementation among the senior leadership teams.

Mentoring was intended to function as a parallel track rather than an addendum, so each participant was matched with a Project Management Professional (PMP) certified in project management with experience in healthcare and contextual familiarity. Within the mentorship framework, the participant's project materials were reviewed, and weekly check-in meetings and informal, on-demand consultations were held. This paired system of assistance not only reinforced education, provided real-time troubleshooting, and built assurance in leadership skills. It is noteworthy that these informal mentorships were sustained beyond the duration of the formal mentorships, and thus informal communities of practice were formed, significantly contributing to the ability to retain skills and learn from peers. In organizations with well-developed governance structures, a train-the-trainer model was added to the existing framework for the program. Alumni from the initial cohorts were equipped with the skills necessary for instructional design, thereby allowing them to tailor the training to suit the internal needs of the organization. This not only broadened the scope of the program but also decreased reliance on external consultants or facilitators. These models tend to increase the ability to sustain an initiative as described in the literature on capacity-building, and in this instance, they were able to experience a multiplier effect as the already trained leaders turned into advocates, educators, and change agents in their respective institutions (Turner and Müller, 2005; Awe *et al.*, 2017) ^[118, 13].

Importantly, the framework design also captured mechanisms for continuous feedback-based changes and improvements. Feedback was captured at several points such as pre-program, midpoint, endpoint, and three months post-completion. Content, delivery, and mentorship models were modified based on feedback insights. For example, a micro-module on adaptive project governance was created to address the feedback gap financial leaders had regarding support on agile project design. In the same vein, feedback provided by clinical participants regarding the difficulty of guiding multidisciplinary teams prompted the expansion of a conflict management module. This proactive approach to curriculum change displays the principles of commitment to relevance informed by learner-centricity, responsiveness, and adaptability which is critical to volatile healthcare and sociopolitical landscapes.

A synthesis of leading international guiding documents on project management education, coupled with regionally focused healthcare leadership pioneered the design framework for the PMI-aligned competency program. This design framework operationalized complexity through modularity, flexibility, mentorship, contextual relevance, and application while also embedding itself within institutional performance frameworks. Coupled with rigor, this flexibility and responsiveness to learner needs enabled the achievement of the defined outcomes and goals while creating a replicable

agile healthcare leadership framework.

3.3. Stakeholder Engagement and Change Management Integration

The nature of any project management intervention within the healthcare context—a field rife with critical, high-stake challenges—requires not just technical proficiency, but sound stakeholder management, adept engagement with multidimensional change ecosystems, and effective navigation of delivered change. The PMI-compatible project management competency program integrated stakeholder engagement and changed management at all levels, from program design to implementation and evaluation. This analysis explains the design and implementation of such elements, their reception within the healthcare institutions, and the more general issues of program replicability and transformational leadership development.

According to the PMI guidelines on stakeholder management, there was a focus on the precise identification, classification, and analysis of stakeholders within the given timeframe of the program. Each participant was trained on stakeholder mapping, which included influence-interest grids, power-dynamic matrices, and RACI charts. During the training, participants implemented these tools on real projects, enabling leaders to not only comprehend their institutional landscapes but also formulate engagement strategies in advance. This clearly illustrates a significant advancement from the predominant ad hoc communication frameworks which characterize institutional culture. In such frameworks, consultants were only brought on board during project crises, or after the planning phase was considered complete. The structured nature of the training assisted participants in recognizing engagement not merely as a procedure but as a continuous process pivotal to the success of the projects.

The use of stakeholder engagement strategies proved useful in addressing traditionally hierarchical organizational frameworks. In some African and South Asian Institutions, clinical leadership sits under a central system of governance decision-making by executive boards and ministry officials. Attendees learned to apply stakeholder analysis not only for building consensus, but for forecasting and managing resistance, institutional politics, and alignment of overarching policy frameworks. This proactive engagement eliminated some forms of conflict while increasing others, as seen in the increased participation from departmental heads and finance directors to project planning sessions after training. In European contexts, the same approaches aided in facilitating critical but often overlooked inter-departmental collaborations essential in system wide digital transformations and integrated chronic disease programs.

Change management principles were incorporated into the training as a secondary instructional leadership layer, even though they were not formally included in the PMI syllabus. It utilized frameworks like Kotter's 8-Step Change Model and Prosci's ADKAR model to guide participants through awareness, desire, knowledge, ability, and reinforcement. Participants were taught to anticipate resistance to change, build powerful project narratives, and select institutional change agents. These models were not taught as mere theories; they were actively used in ongoing project work. For instance, in one hospital, the ADKAR model was used in an initiative to map the emotional and behavioral pathways of the surgical staff, predict resistance, and formulate targeted

strategies to ensure compliance during the implementation of the new surgical checklist system.

Table 2: Common Stakeholder Types and PMI Engagement Strategies in Healthcare Projects

Stakeholder Group	Engagement Strategy Used	Outcome Achieved
Department Heads	Influence-interest grid + regular updates	Increased buy-in and reduced conflict
Financial Controllers	RACI chart + cost-benefit narratives	Better budget negotiation and approval
Clinical Staff	ADKAR model + pilot testing	Improved adoption of procedural innovations
Ministry Officials	Policy alignment briefings	Secured regulatory support and grant funding

The connection between change management and stakeholder engagement was most evident in cross-departmental collaboration and change projects. For example, a financial executive analyzed stakeholder impacts and promoted a controversial procurement restructuring as an initiative aimed at enhancing patient safety instead of a cost-saving initiative. By reframing the story and involving clinicians as collaborators, the project was transformed from resistance into engagement. This type of post-program communication was a strategy emphasized during program reflections. Many reported that effective alignment of stakeholders was the most impactful leadership take away from the program.

The stakeholder engagement workshops from the earlier modules of the program were complemented by the mentorship sessions, demonstrating the importance of stakeholder engagement. Mentors assisted participants in diagnosing organizational politics, coaching difficult dialogues, and implementing influence strategies in blunt settings. This iterative process was especially useful in dealing with projects that have stubborn resistance and intricate power dynamics. In addition, participants were expected to include stakeholder engagement in project plans. After recognizing the proposed strategies significantly improved project outcomes, several institutions started incorporating stakeholder engagement into project templates and governance frameworks.

The recurring issue in all contexts was the communication of the stakeholders with the leaders of the organization was viewed simplistically. With clinical leaders, active stakeholder participation was viewed, at least in the initial phases, as purely administrative exercise. With time, as engagement was implemented, perceptions started to change as participants witnessed smoother project implementation, appropriate delays, better resource utilization, and overall enhanced alignment. This is consistent with Heifetz and Linsky's (2017)^[65] observation that adaptive leadership not only requires a dose of head and hand work but also requires heart and systems, which is something stakeholder management provides.

This was particularly salient in institutions undergoing reforms termed change fatigue. As leadership reported, staff and middle management reluctance was directed not at project outcomes but to ongoing alterations of monotonous changes to policy, workflow, and shifts in leadership. With the provided prioritization, sequencing, and empathy-based stakeholder engagement, the latter directly addressed the former. Hearing readiness was a phrase that aligned participation pacing with organizational capacity while enabling minor victories to engender increased organizational adaptability. An instance of this was in the project aiming to streamline digitization of patient intake procedures. Pre-emptive readiness stakeholder assessments resulted in incremental phased sprints, improving adoption and reducing frontline staff stress.

As you may recall, both social identity and occupation impacted project stakeholders. bias, and cross-functional project initiation barriers faced by women leaders in clinical, male-dominated fields are a good example of this. Yet, project management may help ease these biases because it is process-oriented and standardized. One described project management paradigm shift, whereby the introduction of formal project charters and stakeholder maps to proposal processes led to perception shifts to evidence-based proposal evaluation devoid of politicized frameworks. This illustrates that in addition to its intended purposes, frameworks of project management can facilitate social equity, professional empowerment, and empowerment of marginalized professionals, which is in line with recent studies concerning health leadership and gender dynamics (Bidemi *et al*, 2021)^[19].

Overall, institutions with provost and minister level sponsorships showed greater stakeholder alignment across project life cycles. This can be explained by the observation that in these systems, stakeholder engagement was standardized and not left to project leaders, rather integrated into organizational policies. For instance, stakeholder impact assessments were prerequisites for budget approval, and satisfaction scores were mandatory in project close-out reports. These practices not only enhanced transparency and institutional memory but also enabled leadership to approach organizational change as a strategic continuum instead of a series of isolated events.

Change management and stakeholder engagement both aligned to the strategic leadership PMI defined for the PMI-aligned competency development in healthcare, it regarded these leadership skills as healthcare's formative center of its strategic development. The curriculum, designed in tandem with the real-time application frameworks, prepared learners to manage intricate social systems, mobilize shared agreement for action, and spearhead transformative change within the human systems framework. The program's design fully integrated these competencies, confirming the project competencies facilitated sustainable institutional change. This reinforced the idea that the human dimension of project management is as essential to the transformation of healthcare as any Gantt chart or budget spreadsheet.

3.4. Program Sustainability and Institutional Embedding

One of the most prominent issues in developing healthcare leadership revolves around ensuring the enduring persistence of benefits from competency-building programs. Behavioral and knowledge increases that enhance competencies often come and disappear without dedicated efforts towards embedding them systemically. For the PMI-aligned project management competency program, the case was different. Sustainability was an imperative design consideration that was integrated into every stage of the implementation cycle. In the following analysis, we will evaluate how sustainability was operationalized, the determinants of enduring

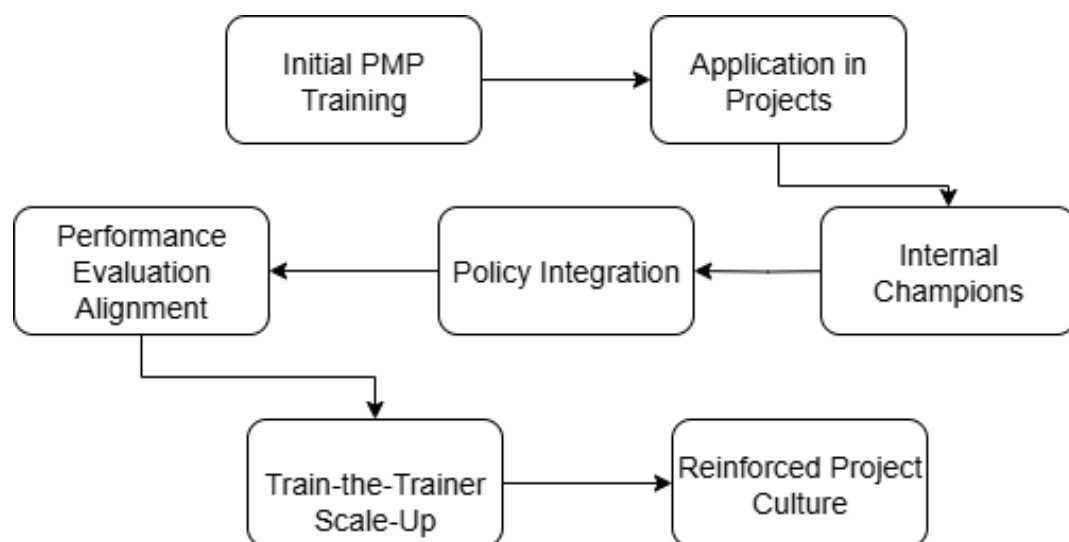
competency retention, and the institutional frameworks necessary for consolidation of gains and leadership continuity.

At its most simplified level, we envisioned sustainability as the enduring embedding of project management skills within leadership pipelines, governance structures, and performance management systems in healthcare. Early in the design phase, we developed a sustainability matrix, as a system in which key organizational level nodes across systems and hierarchies serve as leverage points. A few of this included integration of project competencies as part of performance appraisal systems and alignment with ongoing professional development (CPD) frameworks, as well as the formal acknowledgment of project management within promotion and succession planning frameworks. The enduring embedding of career progression and organizational benchmarks with learning outcomes promoted sustained organizational engagement.

In organizations with developed human resources systems, project management training was included in the yearly plans for leadership growth. For instance, one academic medical center included PMI-aligned modules into the orientation training for newly appointed department heads and clinical coordinators. Another hospital established a recurrent

seminar series termed, "Leadership in Practice," delivered by peers of the first training course. Such strategies helped integrate project management competencies as a continuous evolving mark of leadership rather than as a one-off skill. This corroborates the WHO (2021)^[97] and the Institute for Healthcare Improvement recommendations, which advocate the incorporation of leadership training into institutional frameworks.

One notable factor impacting sustainability was the creation of internal champion executives who supported, instructed, or exemplified the application of the project management tools during the post-training period. These champions facilitated all forms of resource-supported peer learning, informal mentoring, and resource collaboration. This was particularly successful in organizations that were flat or had strong professional ties. As an example, in one organization, a group of trained nurse leaders developed a "PM Tool of the Month" bulletin that was distributed to various departments. It illustrated the application of PMP project management concepts in actual projects. This exemplifies the potential of sustainability in peer determined frameworks which are rooted in community practice rather than in top-down mandates.



Source: Author

Fig 2: Curriculum Design Logic of PMI-Aligned Healthcare Leadership Program

Policy integration has also emerged as a critical approach for sustainability. A number of hospitals modified their SOPs and project approval workflows to incorporate templates aligned with PMIs. The creation of project charters, stakeholder analysis grids, and risk management logs became standardized and automated as part of the institution's digital workflows. This resulted in a shift from reliance on individual skills to the formalization and institutionalization of project management as a standardized process. This facilitated the ability for newly trained leaders to deploy their skills within automated frameworks and ensured that shifts in leadership were not project-ending. Turner and Müller (2005)^[118] emphasized the importance of moving away from personality-driven management to reach sustainability, which in these settings has been successfully validated.

Among the more innovative sustainability practices described was the development and implementation of internal Project Management Communities of Practice

(PMCoPs). These informal, interdisciplinary groups met every three months with the purpose of providing project status updates, addressing challenges, and analyzing both successful and unsuccessful cases. Notably, these groups had no formal rank; both junior and senior leaders participated and contributed equally, which supported the efforts of the organization to promote continuous learning and psychological safety. Eventually, these forums also served as incubators for the development of new ideas, and as mechanisms for the identification of prospective institutional leaders. Moreover, the PMCoPs bolstered the interdisciplinary learning provided by the clinical and financial leaders, which was the very collaboration that the program aimed to foster.

There were multiple constraints to sustainability with regard to these successes. In low-resource contexts, where there is thin institutional capacity and frequent leadership changes, program gains were particularly precarious. For instance, in

a regional teaching hospital with an executive leadership change shortly after training, committed to PMI-aligned practices diminished in the wake of shifting priorities. As monitored by trained leaders, there was a pronounced decline in progress and a return to informal project management coordination. This illustrates the need for institutional safeguard codified policies, automated templates, and interdepartmental governance frameworks that buffer program impact from leadership turnover. As stated by Awe *et al.* (2017) ^[11], enduring capacity development requires resilient systems to personnel and political change.

Another challenge was the allocation of resources. Some institutions were eager to embrace project management but were restricted by budgetary constraints on tools, software licenses, or even dedicated PMO personnel. As a response, the program team devised a sustainability toolkit with minimal resource requirements, including templates, offline video modules, and low-cost evaluation tools. This initiative underscored a critical lesson: realism in resource availability is a prerequisite for sustainability. Complex frameworks or tools are deemed too expensive—regardless of institutional motivation—stand to alienate institutions. In contrast, adaptable and sensitive approaches to cost are more likely to be adopted, and, as a result, diffused.

The problem of scale-up is closely related to sustainability. As more departments or branch offices show interest in the competency program, institutions face challenges related to fidelity, equity, and standardization. Several institutions addressed this with a “train-the-trainer” model where early program graduates received meta-training in teaching the program and were permitted to train future cohorts. Although this model is resource-efficient, it demands robust mechanisms for maintaining uniformity and quality in both content and facilitation. In some cases, proctoring, training, and outcome evaluations were implemented to manage standards during scale-up.

The last psychological aspect to investigate is sustainability. Participants who felt the program was competent were disengaged with advocacy and adoption. In contrast, leaders who actively participated in content customization, case study selection, or delivery method design demonstrated much higher engagement in program uptake and longer-term utilization. This finding underscores the need for participatory design methods in leadership development. As with any change efforts, the level of stakeholder ownership is the most determining factor to its sustained application constantly (Heifetz and Linsky, 2017; PMI, 2021) ^[65].

The convergence of structural, cultural, and political strategies influenced the sustainability of the PMI-aligned project management competency program. Relationships, routines, and feedback loops characterized enforcing policy, thus becoming “policies of relationships.” Support systems such as mentorship and peer learning, policy alignment, and performance tracking either enabled or constrained the program’s success. Where these systems were present, the program exceeded its initial timeline, while the absence of these systems made progress perilously. The findings suggest that true sustainability in healthcare leadership episodic training developed within the institution ecosystems capable of rewarding, reinforcing, and evolving competency over time.

4. Conclusion

Health systems today grapple with intricacy, ambiguity, and conflicting priorities for quality, operational efficiency, and fiscal responsibility. Considering this, the evolution of systematic, prompt, and decisive managerial frameworks has reached a crisis point. This scholarly study concerning the creation and execution of a PMI-adapted project management competency framework for clinical and financial health leaders aimed to provide a solution using design logic, evidence, and tangible outcomes. The study outcomes confirm that the application of project management concepts into advanced healthcare leadership training is highly effective, provided the intervention is integrated, fully and collaboratively rooted, and adapted to the unique characteristics of the institution.

The initiative was designed from the beginning as a strategic thoughtful engagement instead of a standard training course. It was incorporated with Project Management Institute (PMI) standards and specialized healthcare leadership challenges as content to be taught. The gap between structured execution and clinical intuition was bridged. This was historically essential. Healthcare leadership has traditionally been a function of professional experience and years spent within an organization, resulting in little formal training for executive-level concepts such as project governance, scope control, engagement with stakeholders, and even risk management. The program not only enabled the healthcare leaders to acquire a requisite command of project management concepts, but transformed their mindset to embrace leadership as planning, coordination, and fostering a culture of continuous refinement and enhancement. This is evidenced in the program’s quantitative and qualitative outcomes.

Altering participants’ mindsets was the most significant impact of the program. Clinical leaders who were detached from structured methodologies of project work began to plan and execute initiatives more systematically. Simultaneously, the clinical leaders spent more time considering and appreciating the clinical factors that often lead to costly overruns and scheduling failures. The improved understanding brought about greater interdisciplinary collaboration and supported the development of a culture of shared responsibility. These changes in behavior reinforce the claim made by Salas, Reyes and McDaniel (2018) ^[105] that in high-reliability contexts, effective leadership requires not just the relevant domain knowledge, but draws from other areas of communication, coordination, and team cognition that PMI frameworks facilitate.

Alongside the institutional impacts, the program also brought about meaningful culture and performance shifts. Projects undertaken by trained participants displayed enhanced documentation of project scopes, more precise depiction of project scopes, realistic budgeting, and improved stakeholder engagement. More significantly, the organizational adoption of structured tools like stakeholder registers, risk logs, and project charters began to raise organizational norms. A number of institutions modified their project approval criteria to necessitate the use of these tools, thereby institutionalizing project management as part of institutional governance. Thus, the competency program shifted from being solely an intervention aimed at individuals to becoming a powerful

driver of systemic change.

The achievement of the program in question cannot solely be attributed to its content or its instructional design. The program includes a contextual emphasis as an integral element of the program features. The case studies, scenarios, and simulations included the working realities of the participating institutions ranging from resource limitations in sub-Saharan Africa to regulatory constraints in European hospitals. This type of contextualization improved not only interest but also relevance. As Awe and Akpan (2017)^[5] and Bidemi *et al.* (2021)^[19] have argued in other contexts, learning that ignores context is likely to be non-transferable, while learning anchored in contextual realities is likely to be more sustainable.

The addition of mentorship as a strategic enabler of the program is equally notable. Designed leaders received guidance from veteran mentors to help them implement the concepts, deal with institutional politics, and tailor the instruments to their divisions. This mentorship model not only facilitated behavioral transfer but also improved psychological safety in contexts that tend to be innovation-hostile due to the prevailing fear of failure and rigid hierarchical structures. In addition, mentorship fostered informal learning and support networks beyond the timelines set for the different phases of the program, paving the way toward sustainable communities of practice.

Sustainability was built into the deliberate framework of the design rather than being a peripheral element. The program created champions of change and internal managers through integration with institutional policies and performance systems, which created pathways for sustainable competence retention. Those institutions that integrated promotion and advance criteria into the SOPs and leadership succession planning exhibited greater adherence to the project management PMP principles long after the formal training was completed. These outcomes reinforce the argument put forth by Turner and Müller (2005)^[118] that enduring leadership development relies on individual capability juxtaposed to organizational scaffolding.

The program is not devoid of issues that need to be addressed for better program design and implementation. Resource and time limitations, alongside turnover in organizational leadership, proved to be chronic obstacles to full implementation and long-term uptake. Participants to remote lower resource centers often contended with unsustainable infrastructural constraints and a disproportionately high workload combined with limited access to digital learning resources. Momentum maintenance post-executive leadership change proved to be a challenge for some institutions. These outcomes spotlight the need for resilience in planning for design that builds in low bandwidth provision, train-the-trainer frameworks, and policy provision that buffers leadership change volatility.

The other aspect concerns the engagement of stakeholders and the processes of change in the specific context of the program. While these may be considered “soft skills,” these capabilities have proven to be essential in ensuring project success and institutional alignment. The leaders demonstrated greater acceptance, less delay, and lower resistance when they developed stakeholder maps, told project stories, and formed cross-silo coalitions. In addition, the ability to change proactively—in this case, manage resistance, implement in phases, and listen for organizational readiness—made the difference between success and

stagnation in many cases. These insights fit within the context of change management as covered in the literature (Kotter, 2014; Heifetz and Linsky, 2017)^[74, 65] and reconfirm the project leadership in healthcare need to manage stakeholders as the most important elements, not as secondary.

The program yielded valuable insights from an equity perspective. Female leaders and employees from marginalized divisions noted that the rigid and algorithmic approach of project management helped validate their leadership roles. Decision-making based on PMI-aligned tools shifted the dynamics from reliance on personality or seniority to documented strategies and results, thereby democratizing leadership ecosystems. This unintentional consequence, while effective, aligns with recent evidence on the impact of formalization of processes on sponsoring gender and professional equity in leadership roles (Bidemi *et al.*, 2021)^[19]. It also poses critical inquiries for subsequent studies on the use of project management tools to foster diverse and inclusive leadership in global health systems.

As with the case of this program, successful implementation of systems and strategies serves as tools to achieve broader goals, in this case, advancement of health care systems in leadership. As systems and processes become more integrated, multidisciplinary, and results-oriented, managing a project becomes far more crucial than in the past. This evolution undermines traditional organizational leadership structures that hinge on clinical or management skills. Rather, the paradigm for future organizational leadership is that of a strategist and communicator who also manages risks and drives change—essentially all roles encompassed in the PMP project management competency domains.

In consideration of these dynamics, several strategic implications arise. Firstly, it is imperative that healthcare institutions implement project management training at all strata of leadership, spanning frontline supervisors to executive-level positions. Secondly, it is advisable that regulatory and accreditation bodies consider the incorporation of leadership project management skills into the evolving competency frameworks, particularly with the shift of health systems to more digitally integrated frameworks, pandemic readiness, and population health perspectives. Thirdly, international agencies that focus on the strengthening of the global health workforce should actively influence the funding, technical, and policy advocacy directed toward the localized provision of aligned PMI programs. The diverse contextual applicability of this framework, as illustrated by this study, underscores its utility for leadership transformation in both high-income and resource-constrained settings.

Lastly, exploring the enduring effects of PMI-related training on patients, organizational resilience, and system change still requires more work. This study has built a strong initial case for these programs, but there is room for longitudinal investigations on the performance of trained leaders in crises, the relationship of project delivery metrics with clinical benchmarks and the development of mentorship networks into leadership structures. Also, alternative leadership models could be compared to PMI-aligned programs to inform more optimized institutional and curriculum strategic design.

Finally, this journal has documented the creation, execution, assessment, and integration of the PMI-aligned project management competency program designed to prepare clinical and financial healthcare leaders to skillfully tackle myriad challenges. The results validate that project

management is not only viable in healthcare leadership but is a critical underpinning for its advancement. Adapted to the context, collaboratively designed, and institutionally sustained, such frameworks can serve to transform not simply improved projects but improved leaders, improved systems, and in the end, improved health results.

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