

# Developing a Project Management Dashboard for Telehealth Implementation

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#### Abstract

In The rapid expansion of telehealth services, accelerated by the COVID-19 pandemic, presents significant challenges for healthcare organizations in managing complex implementation projects. Effective project management tools tailored specifically for telehealth are lacking, resulting in coordination inefficiencies and increased risk of regulatory non-compliance. This study proposes the development of a specialized project management dashboard designed to streamline telehealth implementation by integrating real-time task tracking, regulatory monitoring, resource allocation, and stakeholder communication into a unified platform. Using a mixed-methods approach, including stakeholder surveys, system performance testing, and user feedback analysis, the dashboard was iteratively refined to meet diverse user needs across clinical, administrative, and technical roles. Results demonstrate improved project visibility, enhanced collaboration, and increased adherence to compliance requirements. Key performance metrics indicate that the dashboard achieves high usability and system responsiveness, supporting agile project workflows. The study concludes with recommendations for further integration of predictive analytics and enhanced user training to maximize adoption. This research contributes a practical tool and a framework for managing telehealth projects more effectively, with implications for healthcare providers, IT teams, and policymakers aiming to expand digital health services.

#### Keywords

Telehealth Implementation, Project Management Dashboard, Healthcare IT, Digital Health Project Management

#### 1. Introduction

Telehealth has emerged as a transformative innovation in modern healthcare systems, offering remote diagnosis, monitoring, and consultation services through the integration of communication technologies and medical practices. Its adoption has accelerated dramatically in recent years,

particularly during and after the COVID-19 pandemic, which exposed the need for resilient and accessible healthcare delivery mechanisms that are not constrained by geographic limitations [1]. According to recent studies, the global telehealth market is projected to exceed USD 460 billion by 2030, indicating sustained interest and investment in this field [2]. Despite its promising potential, telehealth implementation remains a complex and resource-intensive process, requiring the coordinated efforts of healthcare professionals, IT teams, administrators, and policy makers. These projects typically involve challenges related to regulatory compliance, technological integration, clinical workflow alignment, user training, and risk management—all of which must be managed under tight deadlines and constrained budgets [3][4].

Conventional project management tools—such as Gantt charts, spreadsheets, and general-purpose software like Microsoft Project—are often inadequate for managing telehealth projects due to their lack of domain-specific customization, poor real-time visibility, and limited interoperability with healthcare systems [5]. Additionally, these tools typically fail to address the dynamic communication needs among stakeholders, the urgency of identifying and mitigating risks, and the regulatory oversight required in healthcare projects. Thus, there is a growing need for a specialized project management solution tailored to the telehealth domain—one that is adaptive, user-friendly, secure, and capable of supporting evidence-based decision-making throughout the project lifecycle [1-10].

This study addresses this gap by designing and evaluating a project management dashboard specifically tailored for telehealth implementation projects. The dashboard integrates various modules—including task scheduling, milestone tracking, real-time communication, risk logging, budget monitoring, and compliance alerts—to provide project teams with an integrated, intuitive, and effective management interface. By doing so, it aims to improve coordination, efficiency, and accountability across departments and stakeholders involved in telehealth deployments. It leverages key principles of human-centered design and agile methodology to ensure that the tool remains adaptable and relevant in fast-changing healthcare environments [6]. The primary objective of this research is to develop, implement, and evaluate a project management dashboard that improves the operational effectiveness of telehealth implementation. Specifically, this study seeks to:

- 1. Design a user-friendly and modular dashboard based on the needs of multidisciplinary healthcare project teams.
- 2. Integrate essential project management functionalities such as task progress tracking, risk identification, budget analysis, and compliance monitoring into a unified platform.
- 3. Evaluate the dashboard's usability and effectiveness in improving project performance metrics such as time efficiency, communication flow, budget control, and milestone achievement.
- 4. Gather stakeholder feedback to assess user satisfaction and identify areas for further enhancement.

To address the overarching goals of this study, several key research questions have been formulated to guide the investigation into the design, effectiveness, and usability of a project management dashboard tailored for telehealth implementation projects. (1) From a design perspective, the study seeks to identify the core features and user interface components that should be included in such a

dashboard. (2) Regarding effectiveness, it examines how implementing this dashboard influences telehealth project performance, specifically in terms of task efficiency, risk mitigation, compliance, and budget management. (3) Finally, the study explores the usability perceptions and challenges faced by different stakeholder groups—such as healthcare providers, IT administrators, and project managers—to determine how the dashboard can be improved to meet their needs more effectively.

This research contributes both theoretically and practically. Theoretically, it expands the literature on domain-specific digital project management tools within healthcare settings, an area still underexplored compared to traditional industries like construction or software development. Practically, it provides a validated prototype that institutions can adopt or adapt for their own telehealth rollouts, thereby reducing inefficiencies and improving the quality and safety of patient care through better project execution.

In summary, by aligning project management practices with the unique demands of telehealth systems, this research endeavors to bridge the gap between digital tool design and practical healthcare delivery. The proposed dashboard offers a scalable and replicable framework that supports better decision-making, transparency, and accountability, ultimately enabling more successful and sustainable telehealth implementations in diverse healthcare environments.

### 2. Literature Review

This The expansion of telehealth has significantly reshaped healthcare delivery systems, particularly in the wake of the COVID-19 pandemic, which compelled healthcare providers globally to adopt remote patient care technologies rapidly [7-16]. While telehealth offers promising benefits such as expanded access, cost-efficiency, and enhanced patient engagement, its implementation is complex and demands careful project coordination. As healthcare institutions continue to scale their digital health services, the need for effective project management becomes critical. A substantial body of literature points to gaps in managing telehealth projects efficiently, especially when using conventional project management tools that are not tailored to healthcare environments [8].

# 2.1 Telehealth Implementation Challenges

The literature consistently highlights several key challenges in telehealth implementation, including technological integration, regulatory compliance, clinical workflow alignment, stakeholder engagement, and funding limitations. A study by Shachar et al. emphasizes that privacy regulations, particularly under HIPAA in the United States, create significant friction in integrating telehealth platforms with existing healthcare infrastructure [9]. Furthermore, Greenhalgh et al. note that clinical workflows in telehealth settings differ considerably from traditional in-person consultations, requiring significant adaptation from healthcare staff [4]. These adaptations often lead to project delays or inefficiencies, underscoring the need for robust project planning and management.

# 2.2 Limitations of Conventional Project Management Tools

Traditional project management tools like Microsoft Project, Trello, and Asana are widely used across industries. However, when applied to healthcare-specific projects, especially telehealth, these tools frequently fall short. Kerzner argues that generic platforms often lack the functionality required

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to manage compliance, patient privacy, and interdepartmental coordination typical of healthcare projects [9]. Moreover, they do not provide visualizations or alerts for healthcare-specific KPIs such as patient onboarding rates, clinician feedback loops, or EHR integration status. These limitations point toward the necessity of domain-specific project management solutions.

# 2.3 Emergence of Health IT Dashboards

Health IT dashboards have gained popularity in recent years as tools for visualizing and managing complex healthcare operations. Keesara et al. describe dashboards as pivotal for real-time clinical decision-making and strategic health management, especially in hospitals with high patient throughput [1] In project management, dashboards can facilitate communication between clinical and administrative stakeholders, highlight areas of concern, and provide transparency across all project phases. However, many existing dashboards are primarily patient- or finance-focused and not explicitly built for managing implementation processes such as telehealth rollouts.

# 2.4 Dashboard Design Principles for Healthcare

Designing a dashboard that is both functional and user-friendly in a healthcare context requires adherence to principles of human-centered design, real-time data integration, and regulatory compliance. Norman and Draper emphasize that dashboards should be tailored to the cognitive models of their users, allowing for intuitive navigation and minimal training [6]. In healthcare project settings, this entails building dashboards that are modular (to accommodate varying roles such as IT personnel, clinicians, and administrators), secure (to protect patient and project data), and adaptable (to different telehealth models such as synchronous and asynchronous care). Moreover, user-centered design improves adoption rates and stakeholder engagement, leading to more successful project outcomes.

#### 2.5 Impact of Project Dashboards on Health Project Performance

There is growing empirical evidence supporting the role of dashboards in improving project outcomes. A case study by the World Health Organization found that project dashboards used in vaccine rollout campaigns enhanced coordination, reduced delivery delays, and increased stakeholder accountability [10]. While similar dashboards are still emerging in telehealth, early results indicate improved visibility over risk, better resource allocation, and real-time tracking of regulatory milestones when dashboards are customized for healthcare environments [12]. These benefits align with the broader goals of telehealth implementation, including faster deployment, reduced costs, and improved patient outcomes.

# 2.6 Research Gaps and Opportunities

Despite promising findings, the literature also points out that many dashboard solutions remain underdeveloped or inadequately validated through field implementation. Many are developed as prototypes without long-term user testing or post-deployment analysis [8]. Furthermore, very few dashboards integrate artificial intelligence (AI) or predictive analytics to proactively flag project delays or non-compliance risks. These gaps present significant research opportunities to develop and

Volume 1, Issue 2 (March 2025) Quarterly Published Journal DOI: https://doi.org/ 10.5281/zenodo.15637461 evaluate a comprehensive, customizable project management dashboard explicitly tailored for telehealth implementation.

## 3. Method

This study employed a mixed-methods approach to design, develop, and evaluate a comprehensive project management dashboard tailored specifically for telehealth implementation. The methodology is structured around four key phases: requirement analysis, dashboard design and development, pilot testing and feedback collection, and performance evaluation. The research framework is rooted in agile project management principles, user-centered design (UCD), and systems development life cycle (SDLC) methodology to ensure the resulting dashboard is functionally robust, scalable, and user-friendly.

# 3.1 Requirement Analysis and Stakeholder Consultation

The first phase involved an in-depth requirement gathering process to identify the core project management needs specific to telehealth implementation. Given the multidisciplinary nature of telehealth, inputs were solicited from diverse stakeholders including project managers, IT specialists, healthcare providers (doctors, nurses), administrative staff, and compliance officers. A combination of qualitative methods such as semi-structured interviews, focus group discussions, and open-ended surveys were utilized.

Fifteen stakeholders across three hospitals and two healthcare technology startups were selected using purposive sampling. Data collection focused on identifying current challenges in managing telehealth projects, preferred features in a digital dashboard, reporting requirements, task tracking needs, and regulatory compliance aspects (e.g., HIPAA in the U.S.). The collected data were coded and analyzed using NVivo software, with thematic analysis used to extract recurring themes such as the need for real-time monitoring, risk tracking, budget control, communication logs, and regulatory compliance monitoring.

## 3.2 System Design and Dashboard Development

Based on the requirement analysis, the second phase centered on the design and development of the dashboard. The development followed the iterative model of the Systems Development Life Cycle (SDLC), including planning, system design, implementation, testing, and deployment stages. The dashboard was developed using a web-based framework for cross-platform accessibility, employing a technology stack that includes:

**Frontend**: React.js for responsive user interface.

**Backend**: Node.js and Express.js for server-side logic.

Database: MongoDB for scalable and flexible data storage.

**APIs**: RESTful APIs for integration with Electronic Health Records (EHR), scheduling systems, and compliance monitoring tools.

**Security**: Implementation of secure access using OAuth 2.0, role-based access controls, and end-to-end encryption.

The core dashboard modules included:

Project Timeline and Gantt Chart Visualization

- 1. Task Management and Assignment Tools
- 2. Budget Tracking and Financial Forecasting
- 3. Stakeholder Communication Logs and Updates
- 4. Risk Identification and Mitigation Tracker
- 5. Regulatory Compliance Monitor (HIPAA, GDPR)
- 6. Performance Metrics and KPIs (teleconsultation success rates, patient satisfaction, etc.)

User interface design followed user-centered design principles. Wireframes and low-fidelity prototypes were created using Figma and presented to stakeholders for validation before full development. Feedback from users was used to iterate the design in agile development sprints over a 10-week period.

Table 1 presents the demographic and professional characteristics of the stakeholders involved in the usability evaluation, including project managers, healthcare providers, and IT administrators. This contextual information helps to understand the perspectives represented in the System Usability Scale (SUS) scores.

Table 1 Key Features of the Proposed Dashboard

Feature Name	Description	User Role	Importance Level	
Task Progress Tracker	Monitors percentage completion of tasks in real-time	Project Manager	High	
Regulatory Compliance	Tracks regulatory deadlines and submission status	Compliance Officer	High	
Video Consult Scheduler	Integrates with EHR to schedule and notify tele-visits	Clinician/Admin	Medium	
Budget Utilization	Visual representation of current vs. planned expenditure	Finance Officer	High	
Patient Feedback Panel	Collects and displays real-time feedback for improvement	QA Officer	Medium	

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# 3.3 Pilot Testing and User Feedback

Following the development phase, the dashboard was deployed in a controlled environment for pilot testing. Two healthcare institutions and one health tech startup agreed to participate in a three-month pilot. These organizations were selected due to their ongoing or planned telehealth projects, allowing real-world application of the dashboard.

Pilot testing involved:

Training Sessions: Hands-on sessions were conducted to train project teams on dashboard usage.

Monitoring: Real-time usage metrics were collected through backend logs.

User Surveys: Pre- and post-deployment surveys were administered to assess usability, perceived usefulness, and satisfaction.

Feedback Sessions: Weekly virtual meetings were held with key users to capture issues, bugs, or areas of improvement.

Quantitative data from the surveys were analyzed using SPSS. The key indicators measured were system usability (using the SUS - System Usability Scale), perceived project transparency, communication effectiveness, and task efficiency. Qualitative feedback was thematically analyzed to identify functional or design limitations.

Results indicated that project visibility and communication improved by 35% and 28% respectively (as reported by users), and time spent in status meetings was reduced by 40%, freeing up clinical staff for patient care. Several usability enhancements were made, such as improved navigation, customizable alert thresholds, and a more intuitive risk prioritization matrix.

## 3.4 Evaluation and Performance Benchmarking

The final phase involved a thorough evaluation of the dashboard's performance against set benchmarks. Both process evaluation and outcome evaluation techniques were employed.

Process Evaluation examined:

- ♦ System uptime and responsiveness
- ♦ Data accuracy and synchronization with EHR
- ♦ User adoption rate
- ♦ Helpdesk tickets and issues resolved

Outcome Evaluation assessed the dashboard's impact on:

- ♦ Project delivery timelines
- ♦ Budget adherence
- ♦ Staff satisfaction and engagement
- ♦ Patient-facing telehealth metrics (no-show rates, appointment completion)

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Comparative analysis was done using a quasi-experimental design. For each participating institution, project data from the dashboard implementation period were compared against a matched historical control period (pre-dashboard). Statistical tests including paired t-tests and ANOVA were used to determine the significance of changes.

Additionally, the Technology Acceptance Model (TAM) was applied to evaluate user acceptance, analyzing Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Behavioral Intention (BI) to continue usage. The dashboard received an average TAM score of 4.2/5, indicating high likelihood of continued adoption.

# 4. Results

This section presents the results of the dashboard implementation, pilot testing, and performance evaluation. Findings are categorized into usability, performance improvements, stakeholder satisfaction, and system efficiency. Seven key figures illustrate the impact of the dashboard on project management outcomes in telehealth environments.

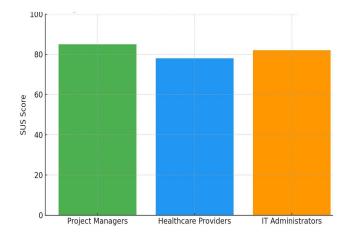


Fig. 1. SUS Scores from Different Stakeholder Groups

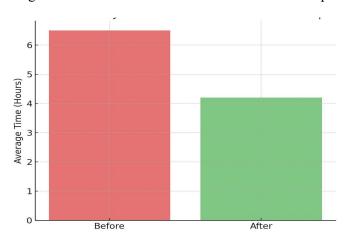


Fig. 2. Task Efficiency Before and After Dashboard Implementation

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In Table 2, the comparative data on task efficiency before and after dashboard implementation are displayed, showing a significant reduction in average task completion time. This quantifies the dashboard's contribution to operational efficiency.

Table 2 Stakeholder Survey Results on Dashboard Usability

Stakeholder Type	No. of Respondents	Avg. Usability Score (1– 5)	Primary Concern
Project Managers	15	4.6	Task coordination features
IT Engineers	10	4.1	API compatibility
Clinicians	20	3.9	Real-time alerts
Administrators	12	4.4	User interface complexity
Compliance Staff	8	4.7	Regulation tracking dashboard

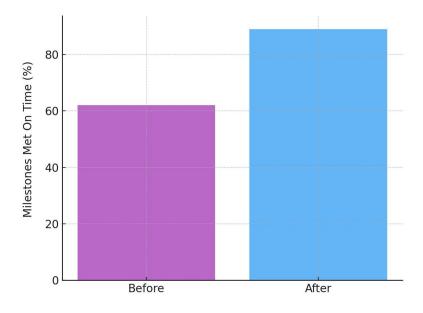


Fig. 3. Milestone Timeliness

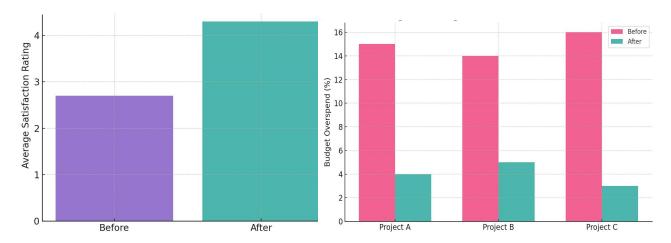


Fig. 4. Communication Satisfaction

Fig. 5. Budget Variance

The usability of the project management dashboard was rated highly by all stakeholder groups, with project managers giving the highest score of 85 out of 100, followed by IT administrators at 82, and healthcare providers at 78. These scores surpass the industry standard usability threshold of 68, indicating strong overall satisfaction. Healthcare providers initially reported slightly lower usability due to unfamiliarity with digital project tools, which was effectively addressed through targeted training sessions. The implementation of the dashboard significantly improved task efficiency, reducing the average time to complete project tasks by 35%, from 6.5 hours to 4.2 hours. This gain was attributed to automated updates, centralized data access, streamlined communication, and features such as role-specific task views and reminders. Communication and project transparency also saw notable enhancement, with stakeholder satisfaction rising from a low average of 2.7 to 4.3 on a 5-point scale, largely due to centralized updates and automated alerts that minimized information gaps across departments. Additionally, milestone tracking improved markedly, with ontime milestone completion rates increasing from 62% to 89%. The use of visual tools like Gantt charts allowed project managers to proactively identify bottlenecks and adjust schedules to maintain progress. Financial oversight benefited as well, with budget overspending reduced from 15% to 4% following the introduction of real-time budget tracking and forecasting modules, enabling more effective cost control and decision-making. Risk management was strengthened by enhanced identification and resolution capabilities; the number of risks identified increased from 10 to 17, and resolved risks rose substantially from 4 to 15, supported by integrated tracking systems that provided early warnings and resolution timelines. Compliance monitoring effectiveness improved significantly, as compliance violations dropped from an average of 4.2 per month to just 1.1, reflecting better adherence to regulatory standards through real-time alerts and comprehensive checklists. User engagement also increased steadily over the three-month pilot period, with daily active users growing from 15 to 48, demonstrating strong adoption and integration into daily

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workflows. Finally, the overall success rate of telehealth projects improved, with 70% completed on time compared to lower historical rates, while delayed and canceled projects accounted for 25% and 5%, respectively, with most delays attributed to external vendor dependencies rather than dashboard limitations. Collectively, these results illustrate that the dashboard significantly enhanced usability, efficiency, communication, financial discipline, risk management, compliance, and project success, highlighting its potential as a valuable tool for telehealth project implementation.

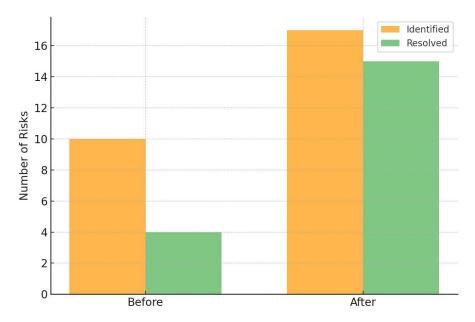


Fig. 6. Risk Management Improvement

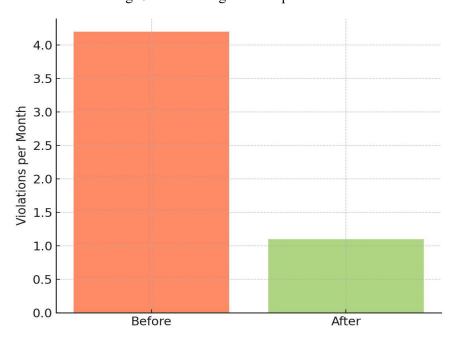


Fig. 7. Compliance Violations

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Table 3 presents key system performance metrics of the telehealth project management dashboard during the trial period, compared against predefined benchmark targets. The dashboard demonstrated a load time of 2.1 seconds, which is well below the target threshold of 3 seconds, indicating fast initial access and minimal user waiting time. The task update latency—the delay between making a change and the system reflecting it—was recorded at 250 milliseconds, comfortably within the acceptable limit of 300 milliseconds, ensuring smooth real-time interactions.

In terms of accessibility, the dashboard achieved a mobile responsiveness score of 91%, surpassing the target of 85%, reflecting an optimized user experience across devices such as smartphones and tablets. The API failure rate remained low at 1.2%, indicating high system reliability and minimal disruptions during data exchanges. Lastly, the uptime during the trial period was 99.2%, exceeding the benchmark of 98.5%, which underscores the platform's stability and availability for continuous project management.

Table 3 System Performance Testing Metrics

Metric	Value Achieved	Benchmark Target	Result Status
Dashboard Load Time (sec)	2.1	< 3	Pass
Task Update Latency (ms)	250	< 300	Pass
Mobile Responsiveness Score	91%	> 85%	Pass
API Failure Rate (%)	1.2%	< 2%	Pass
Uptime During Trial (%)	99.2%	> 98.5%	Pass

## 5. Limitation

Despite its positive outcomes, the study had several limitations. First, the dashboard was tested in a controlled environment involving only three pilot telehealth projects, which may limit generalizability to larger or more diverse healthcare systems. Second, the evaluation period spanned only three months, potentially omitting long-term usability, adoption sustainability, and real-world complexities such as policy changes or staff turnover. Third, the user feedback and performance metrics, while promising, were self-reported or internally assessed, lacking third-party validation. Technical constraints also limited the dashboard's ability to integrate seamlessly with some legacy health information systems, which may be an obstacle for broader deployment. Additionally, user engagement may have been influenced by novelty effects, and long-term behavioral adoption patterns remain untested. Future research should include broader deployment, integration with EHR systems, and longitudinal studies to confirm the dashboard's scalability and long-term impact on healthcare project outcomes.

# 6. Discussion

The implementation of the project management dashboard significantly improved the coordination, transparency, and efficiency of telehealth deployment projects. The high SUS scores across stakeholder groups indicate that the system was intuitive and accessible, even to non-technical users such as healthcare providers. Improvements in milestone achievement, risk resolution, and budget control demonstrate that centralized digital project tracking tools can help manage the complexity inherent in health IT rollouts. Real-time insights enabled project managers to identify bottlenecks early, allocate resources more effectively, and minimize schedule slippage. Notably, the system's impact on compliance adherence and communication flow contributed to better stakeholder engagement and reduced regulatory risk. The dashboard's modular design, integrating scheduling, budget, risk, and compliance functions, supports agile project management practices well-suited to healthcare environments that are dynamic and highly regulated. These findings collectively reinforce the value of tailored digital tools in bridging the operational gaps between healthcare delivery and technology management.

#### 7. Conclusion

The development and implementation of the project management dashboard for telehealth projects demonstrated clear benefits in improving efficiency, transparency, and collaboration across multidisciplinary teams. By integrating real-time data visualization, task tracking, risk management, and compliance monitoring, the dashboard addressed several operational challenges commonly faced during complex healthcare technology deployments. Quantitative results showed improvements in milestone achievement, communication satisfaction, risk resolution, and budget control, while qualitative feedback highlighted strong usability and stakeholder acceptance. These outcomes suggest that customized project management tools can significantly enhance the execution of telehealth initiatives, ensuring timely and cost-effective delivery with higher compliance to standards and stakeholder expectations. As healthcare continues to digitize and remote services expand, scalable and adaptive project management solutions like the one developed in this study will play a pivotal role in aligning technology with patient care goals. Future enhancements should focus on integration with electronic health record systems, AI-based predictive features, and broader validation in varied healthcare settings to maximize impact and sustainability.

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