

AI AND AUTOMATION IN CLICKUP: ENHANCING TIME AND COST EFFICIENCY IN DIGITAL PROJECT MANAGEMENT

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DOI: <https://doi.org/10.5281/zenodo.22038831>

Keywords

artificial intelligence; workflow automation; digital project management; ClickUp; AI agents; operational efficiency; remote work; qualitative case study

Article History

Received: 28 June 2026

Accepted: 02 August 2026

Published: 21 August 2026

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Abstract

Automation and artificial intelligence (AI) are reshaping digital project management by improving decision-making, efficiency, and coordination. However, limited research has examined how rule-based automation and native AI agents operate jointly within a single platform. This study investigates the combined use of embedded automation and integrated AI in ClickUp within a service-oriented business environment. Using a qualitative case study design supported by system-generated operational data, the paper examines how a configured AI Super Agent automates task archiving, recurring scheduling, and reporting activities for a UK-based contract cleaning services provider that is managed remotely. The findings indicate that deterministic automation substantially reduces repetitive administrative effort, while AI-assisted reporting improves managerial visibility and the speed of decision-making. The integrated configuration further strengthens internal operational efficiency, productivity, and workflow continuity, particularly in remote management settings where administrative labor is billed hourly. The study contributes an Embedded AI–Automation Workflow Model, which explains how structured, semi-autonomous workflows emerge from the interaction between deterministic rules and adaptive AI agents within a unified digital platform, and it provides empirical evidence from a live operational environment rather than an experimental setting.

I. INTRODUCTION

Artificial intelligence (AI) and automation have become a transformative force in the rapidly changing field of digital project management, altering the way teams collaborate and complete work. ClickUp, an all-in-one project management platform, exemplifies this shift by embedding intelligent agents and rule-based automation features directly into its ecosystem. Such tools streamline administrative procedures while improving communication, task prioritization, and strategic decision-making [1]. Chaudhary et al. [2] report that adaptive AI mechanisms of this kind outperform conventional systems in real-time task monitoring.

Agility, data-driven insight, and scalability are essential in contemporary project environments. Conventional systems that rely on manual updates frequently suffer from data fragmentation and process inefficiency. ClickUp's native AI agents and automation rules address these constraints by using embedded intelligence to enable self-optimizing workflows and predictive analysis [3]. This development is consistent with broader findings in AI-assisted project management, which emphasize the importance of integrated analytics for improved decision-making [4].

As organizations adopt remote and hybrid work models, the need for effective coordination and transparent workflows has increased. By

automating routine tasks and producing contextual recommendations for resource allocation, AI and automation frameworks improve remote collaboration [5], [6]. Ajibade [3] and Bieliaiev [5] report that such systems markedly improve operational transparency and communication coherence among dispersed teams.

Existing research on AI and automation in project management has concentrated on general-purpose AI tools, comparative platform analyses [5], and user-adoption perspectives. Related work has examined adaptive AI monitoring [2], agile project management software [7], and software integration approaches [8]. Comparatively little attention has been given to how native AI agents and deterministic automation operate jointly within a single digital project management platform such as ClickUp, and empirical evidence from real-world operational environments remains insufficient.

The problem addressed in this study is therefore the limited empirical understanding of how integrated AI and automation within a unified digital platform influence managerial efficiency, workflow continuity, and operational performance in real-world project environments.

This study makes three contributions. First, it presents a case-based implementation of ClickUp's embedded AI and automation system in a live service-oriented organization. Second, it demonstrates how deterministic rules and AI agents jointly enable self-optimizing workflows that reduce administrative effort and support managerial decision-making in a remote environment. Third, it formalizes these observations as the Embedded AI-Automation Workflow Model, which conceptualizes digital project management platforms as dual-layer environments combining structural stability with adaptive intelligence.

The remainder of this paper is organized as follows. Section II reviews the literature on AI and automation in project management and identifies the research gap. Section III describes the research methodology and the operational ClickUp implementation. Section IV presents the results. Section V discusses the theoretical and practical implications, limitations, and directions for future work. Section VI concludes the paper.

II. LITERATURE REVIEW

A. Artificial Intelligence in Digital Project Management

Automation and artificial intelligence now underpin modern project management systems. Evidence indicates that these technologies improve productivity, precision, and real-time flexibility in digital workspaces [9], [10], [6]. Salimimoghadam et al. [6] argue that the combination of automation and AI-driven analytics produces a synergistic environment in which human judgment and machine execution jointly optimize outcomes, a pattern also observed in studies of digital transformation in production settings [11]. ClickUp illustrates this combination by pairing adaptive intelligence with deterministic automation to enable dynamic task execution.

Odogwu et al. [12] find that AI-augmented workflows improve team productivity and decision-making in asynchronous project environments by lowering cognitive load and increasing collaboration efficiency.

Artificial intelligence is increasingly recognized as a critical enabler of advanced project management capabilities, particularly in dynamic and data-intensive environments. Studies indicate that AI-driven systems strengthen project monitoring, predictive analysis, and decision-making by leveraging real-time data and intelligent algorithms [13], [14]. Such systems reduce uncertainty and improve planning accuracy by identifying patterns and forecasting potential risks. AI-enabled platforms also facilitate adaptive workflow management, allowing project teams to respond more effectively to changing requirements and operational conditions. Zosimov et al. [9] show that integrating AI modules within project management platforms significantly improves performance evaluation and task prioritization.

B. Rule-Based Automation and Workflow Consistency

In addition to artificial intelligence, automation plays a fundamental role in ensuring workflow consistency and operational efficiency. Rule-based mechanisms standardize repetitive tasks, reduce human error, and improve process transparency across the project lifecycle [6], [9]. Bieliaiev [5] confirms that deterministic automation guarantees consistent task progression and status updates while preserving audit transparency. Combined with AI-based predictive analytics, this dual foundation allows platforms such as ClickUp

to deliver both operational reliability and strategic insight [2], [12].

Research further suggests that pairing automation with digital project management tools enhances coordination and reduces administrative burden, particularly in remote and distributed team environments. Salimimoghadam et al. [6] emphasize that automation not only accelerates routine processes but also supports scalability by maintaining structured and consistent workflows. This underlines the growing importance of integrating automation within intelligent project management systems in order to achieve both operational stability and efficiency.

Recent work on human-AI collaboration in the workplace [15] and on AI-enhanced agile methodologies [16] highlights the sustainability and scalability advantages of AI-based management systems. These findings support the

argument that integrated AI-automation frameworks, such as the configuration examined in this study, not only raise current productivity but also protect organizations against data silos and inefficient workflows over time.

C. Research Gap

Although the body of research on automation and AI in project management is expanding, most available studies concentrate on user-adoption factors, comparative platform reviews, or general-purpose AI tools. Few studies examine the coexistence of deterministic automation and native AI agents within a single digital ecosystem such as ClickUp, and empirical case-based evidence from actual operational environments remains scarce. Table I summarizes the coverage of representative studies across the dimensions addressed in this work and positions the present study relative to that literature.

TABLE I. Comparative Analysis of Existing Studies and Research Gap

Study	ClickUp Focus	Native AI	Rule-Based Automation	AI + Automation Combined	Workflow Self-Optimization	Empirical Case
Bieliaiev (2025) [5]	X	✓	✓	X	X	X
Bukłaha & Rzepała (2023) [7]	X	X	X	X	X	X
Chaudhary et al. (2024) [2]	✓	✓	X	X	X	✓ (comparative)
Ružić & Jovkić (2025) [8]	✓	X	X	X	X	✓ (qualitative)
This study	✓	✓	✓	✓	✓	✓

Note: ✓ indicates that the dimension is addressed; X indicates that it is not addressed.

III. METHODOLOGY

A. Research Design

This study adopts a qualitative case study design grounded in operational performance observations taken directly from ClickUp. The case organization is a contract cleaning services provider headquartered in the United Kingdom and operated remotely through ClickUp. The company delivers recurring contractual services—twice weekly, three times weekly, weekly, biweekly, and monthly—to a portfolio of client-owned properties. Internal remote freelancers administer operations through the platform and are

compensated on an hourly basis; consequently, reductions in manual administrative workload translate directly into operational efficiency and cost optimization. A case study design was selected because the phenomenon of interest is the joint behavior of AI agents and automation rules within a live organizational setting, which cannot meaningfully be isolated from its operational context.

B. Operational ClickUp Architecture

The ClickUp workspace was configured to provide a centralized digital environment for structured,

recurring property management operations. The architecture comprises a primary archival folder named “2026,” which contains twelve lists corresponding to the months from January 2026 to December 2026. These lists serve as organized archives of completed property tasks according to the month in which they were completed. Alongside the archival folder, a main active list named “Properties” holds all scheduled and ongoing property tasks currently under management. Fig. 1 illustrates the resulting workspace structure.

To guarantee operational consistency and traceability, each property is represented at the task level as a discrete task organized around standardized custom fields. The task name, which matches the property address, serves as the primary identifier. The status field monitors operational progress through the categories “Scheduled,” “In Progress,” and “Completed.” A dropdown custom field stores the client name, guaranteeing client-

level traceability across multiple properties. The job date field records the deadline for cleaning operations, while the cleaner field assigns the responsible cleaning staff through a dropdown selection.

A contract type dropdown field classifies properties by service frequency—twice weekly, three times weekly, weekly, biweekly, and monthly—in order to reflect contractual obligations. A notes field carries additional textual instructions, such as preferred cleaning days. A Google Drive link field holds URLs to before-and-after photographs uploaded for service verification, and an email field supports client communication. Further dropdown fields indicate whether a report has been sent and whether an invoice has been issued. Finally, a Month-Year dropdown field ranging from January 2026 to December 2026 matches each task to its corresponding archival month; this field also acts as the primary trigger for automated classification.

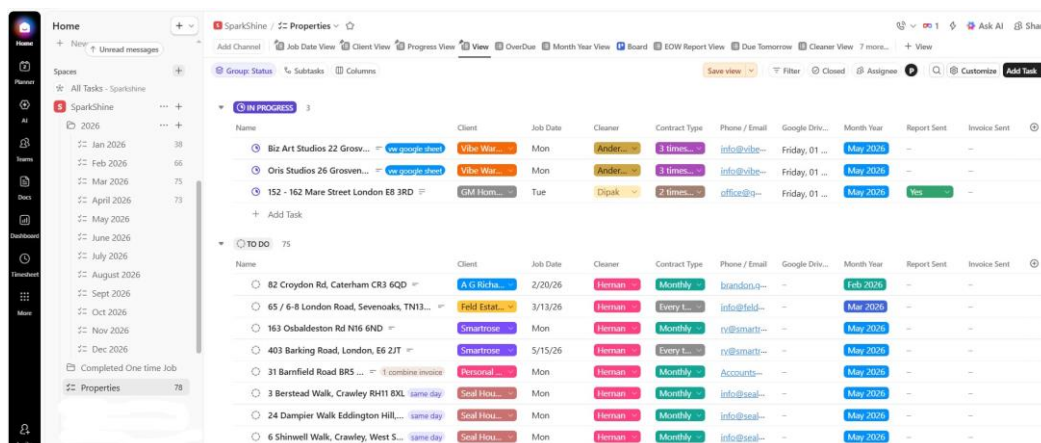


Fig. 1. ClickUp workspace structure showing the active Properties list and the 2026 monthly archival folder and lists, with the standardized custom fields used for each property task.

C. Embedded AI-Automation System

The operational model integrates a supervisory layer that combines a configured AI Super Agent with deterministic automation. The automation framework is activated when a task status changes to “Completed.” Once triggered, the AI Super Agent reads the associated Month-Year field and moves the task to the corresponding monthly list within the 2026 archival folder. In order to maintain service delivery continuity, the system simultaneously creates a new recurring task for the next operational cycle.

Beyond deterministic automation, the AI Super Agent monitors lists and folders. Its responsibilities include verifying cross-listings, confirming the accuracy of Month-Year classifications, establishing recurrence schedules, and supporting dynamic reporting tasks. Through ClickUp's Ask AI feature, management can generate weekly or monthly executive summaries, obtain client-specific operational reports, examine workload distribution across cleaners, identify overdue properties, and monitor reporting and invoicing status. This two-layer configuration

therefore combines rule-based structural control with AI-assisted analytical oversight.

D. Data Collection and Analysis

Data were obtained directly from the ClickUp environment in order to ensure ecological validity in a real-world setting. Primary data sources comprised task activity logs, automation execution histories, dashboard analytics views, and AI-generated management reports. These system-generated records permitted objective observation of workflow transitions, recurrence frequency, and reporting performance.

The evaluation focused on qualitative and operational efficiency indicators rather than on experimental comparison. The dimensions examined were the reduction of administrative workload, the simplification of task lifecycle processes, the improvement of operational visibility across properties and cleaners, and the efficiency of reporting supported by AI-assisted summary generation. Because the organization's remote freelancers are compensated hourly, reductions in repetitive administrative work translate directly into improved internal operational efficiency without affecting service continuity.

IV. RESULTS

This section presents the operational outcomes observed following deployment of the embedded AI-automation system. The findings are organized around four dimensions: administrative efficiency, productivity, reporting, and operational cost efficiency.

A. Administrative Efficiency

Rule-based automation substantially simplified the recurring monthly administrative workload. Previously, internal remote freelancers manually moved completed property tasks, recreated recurring jobs, and reset task fields for the next operational cycle. The embedded AI-automation system eliminated these repetitive processes by automatically archiving completed tasks and generating new recurring instances with contractual data preserved. Manual effort associated with task migration and recurrence setup was consequently reduced, producing a more consistent internal workflow and lower operational friction.

B. Productivity Enhancement

The revised ClickUp architecture improved operational visibility across multiple management areas. Real-time dashboard views allowed management to monitor properties due daily and weekly, review cleaner assignments, and filter tasks by client. This structured visibility reduced the need to cross-reference lists manually and supported proactive planning. Cleaner scheduling and client-level property tracking were consolidated into a single digital space, which improved coordination and reduced delays in oversight.

C. Reporting Optimization

Integrating the Ask AI functionality streamlined reporting processes that had previously been prepared manually. AI-generated summaries enabled management to retrieve client-level activity reports, property completion logs, and operational insights without compiling data from multiple fields by hand. This capability reduced preparation time for executive-level reporting and increased decision-making speed by delivering structured, system-generated summaries directly from the operational database.

D. Operational Cost Efficiency

Although cleaners are assigned operationally on a per-property basis, the internal remote freelancers responsible for managing the business are compensated hourly. Reductions in repetitive administrative work therefore translated directly into improved internal cost efficiency. By minimizing manual task recreation, migration, and reporting preparation, the automation framework lowered administrative time consumption while maintaining service quality and workflow continuity.

V. DISCUSSION

The findings demonstrate that deterministic automation ensures structural workflow consistency, while artificial intelligence enhances cognitive management capabilities through reporting and analytical support. Unlike traditional project management information systems, which focus primarily on static task tracking, this study illustrates how embedded AI and rule-based automation operate jointly within a live service-based ecosystem. Incorporating

structured recurrence logic and cross-list workflow orchestration into the analytical frame extends prior research on adaptive AI monitoring. Together, these elements enable a transition from reactive task management to semi-autonomous workflow optimization.

A. Theoretical Contributions

This study introduces the Embedded AI-Automation Workflow Model, which conceptualizes digital project management systems as dual-layer environments. In this model, deterministic rules provide structural stability by governing task transitions and recurrence, while AI agents supply adaptive intelligence through monitoring, summarization, and analytical support. The interaction between these two layers produces workflow self-optimization, in which operational continuity is maintained automatically and managerial cognition is augmented rather than replaced.

B. Practical Implications

For service-based small and medium-sized enterprises, the findings suggest that native automation can significantly reduce administrative workload while maintaining operational reliability. AI integration strengthens strategic visibility by enabling rapid reporting and workload analysis within a single platform. Consolidating operations into a unified ecosystem reduces tool fragmentation and supports scalable remote management. Organizations that operate with distributed administrative teams may benefit particularly from reduced coordination complexity and improved oversight capabilities.

C. Limitations

This study is limited to a single case organization within the service industry, which may constrain generalizability. The research design includes neither an experimental control group nor quantitative time-tracking metrics for precise efficiency measurement; the reported gains are therefore qualitative and observational rather than statistically validated. In addition, the findings reflect one specific ClickUp configuration and may vary across organizational contexts and platform releases.

D. Future Research

Future research may extend this study by comparing implementations across multiple industries or service models in order to evaluate generalizability. Quantitative return-on-investment analyses could provide stronger financial validation of automation benefits. Further investigation into long-term AI governance, system trust, and human-AI interaction dynamics would also enhance understanding of sustainable intelligent workflow environments.

VI. CONCLUSION

This research shows that ClickUp's native AI agents and rule-based automation operate together to improve productivity, reporting efficiency, and task management within digital project management environments. Rather than functioning as a conventional task management platform, the configured system behaves as a self-contained intelligent operational ecosystem in which routine administrative work is executed automatically and managerial attention is redirected toward analysis and decision-making. The Embedded AI-Automation Workflow Model derived from this case provides a basis for further empirical study of dual-layer intelligent workflow environments across a wider range of organizational settings.

DECLARATIONS

Conflict of interest. The author declares no competing financial or non-financial interests in relation to this work.

Data availability. The operational data supporting the findings of this study were generated within the case organization's ClickUp workspace and are not publicly available owing to commercial confidentiality. Anonymized excerpts are available from the corresponding author on reasonable request.

Funding. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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