Int. j. adv. multidisc. res. stud. 2026; 6(3):198-201

Received: 17-03-2026
Accepted: 27-04-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Workflow Automation for University-Based Open and Distance Education Management: A Google Workspace-Based Applied Framework

[1] Phuong-Lan Vu, [2] Thi Thuy-Hang Han, [3] Thi Dieu-Huyen Nguyen

[1] Thai Nguyen University of Technology, Thai Nguyen 24000, Vietnam

[2] Department of Mechanical Engineering, Thai Nguyen University of Technology, Thai Nguyen 24000, Vietnam

[3] Education Technology and Adaptive Learning Institute, Thai Nguyen University of Technology, Thai Nguyen 24000, Vietnam

DOI: https://doi.org/10.62225/2583049X.2026.6.3.6225

Corresponding Author: **Thi Dieu-Huyen Nguyen**

Abstract

This paper presents an applied framework for automating recurrent administrative and training-management workflows in a university-based open and distance education unit. The study addresses a practical problem: internal work is often fragmented across email, spreadsheets, personal folders and informal messaging channels, resulting in repeated data entry, delayed follow-up, weak traceability and labor-intensive reporting. Using an applied design-oriented methodology, the paper synthesizes evidence from internal process analysis, a staff survey, prototype construction and pilot evaluation. The proposed framework follows the principle of "process first, tools second" and combines Google Forms, Sheets, Drive, Gmail, Calendar, Chat, Looker Studio, Apps Script and Google Workspace Studio/Flows in a four-layer architecture. Three priority workflows - incoming document/task assignment, meeting organization and periodic reporting - were piloted with 28 internal records and requests. Indicative results show a reduction in average processing time from approximately 90-120 minutes to 25-40 minutes, an increase in on-time completion from 65% to about 90-95%, and a decrease in data errors from 12-15% to 3-5%. The paper contributes a replicable automation model, a data governance structure, a workflow implementation roadmap and a KPI set for education-management contexts with limited resources. The findings suggest that low-code and agentic workflow tools can improve transparency, accountability and operational responsiveness when embedded in standardized processes and human-controlled governance mechanisms.

Keywords: Workflow Automation, Google Workspace, Open and Distance Education, Administrative Management, Apps Script, Digital Transformation, Process Governance

1. Introduction

Digital transformation in higher education is not limited to online courses, learning management systems or digital learning resources. It also requires redesigning the administrative and training-management processes that support learners, instructors, academic departments and institutional leaders. For open and distance education units, operational quality is strongly associated with timely communication, transparent records, coordinated task assignment and reliable reporting. When these activities remain dependent on manual email exchange, individual spreadsheets and fragmented storage, the quality of service becomes vulnerable to delays, duplicated data entry and weak accountability.

This paper examines the use of the Google Workspace ecosystem to automate selected internal workflows in an open and distance education management context. The central argument is that automation should not be introduced as an isolated technical intervention. Instead, it must be placed within a process-governance model that defines input data, responsible roles, status rules, deadlines, evidence storage, notification mechanisms and evaluation indicators. Without such standardization, automation may accelerate existing disorder rather than improve management quality.

The study is motivated by a practical need to reduce repetitive tasks in administrative coordination, training support, internal meetings, reporting and progress monitoring. The target environment already uses common productivity applications such as Gmail, Drive, Sheets and Forms, making it appropriate for a low-cost, incremental automation strategy. The paper therefore

asks: How can Google Workspace-based tools be organized into a coherent workflow automation model for education management, and what operational improvements can be observed in a small pilot?

2. Literature and Policy Context

Business process management emphasizes that effective automation starts with modelling the current process, identifying bottlenecks and redesigning the target process before implementing digital tools (Dumas *et al*., 2018; vom Brocke & Rosemann, 2015) [1, 9]. In education management, this principle is especially important because many workflows involve several stakeholders, sensitive data and formal decision points. Automating a poorly defined workflow can create faster but less controllable processes.

The digital education literature increasingly treats institutional management systems, data governance and interoperability as components of a broader digital ecosystem, rather than as separate administrative tools. OECD (2023) [7] highlights the role of digital tools in shaping effective education ecosystems, including institutional management, data reuse and governance. UNESCO guidance on generative AI further stresses that AI applications in education should remain human-centered, transparent and supported by institutional capacity building (Miao & Holmes, 2023) [6]. These perspectives justify a workflow model that combines automation with human review, audit trails and access control.

Google Workspace provides a practical environment for such implementation. Apps Script is described by Google as a cloud-based JavaScript platform for integrating and automating tasks across Google products such as Gmail, Calendar, Drive and Sheets. Google Workspace Studio extends this direction by supporting Gemini-powered workflows and agent design within Workspace applications. These developments create opportunities for non-specialist units to automate routine work while maintaining processes inside familiar institutional tools.

3. Methodology

The study uses an applied design-oriented research approach. First, existing workflows were reviewed to identify repetitive tasks, dispersed data sources and points of delay. Second, a short internal survey was used to capture staff experience with workload frequency, tools used, common errors and automation needs. Third, a target workflow model was designed using a modular architecture. Fourth, a prototype was developed using Google Forms, Sheets, Apps Script, Drive, Gmail, Calendar and dashboard visualization. Finally, the prototype was evaluated through a before-after comparison on selected workflows.

The pilot focused on three representative processes: incoming document and task assignment, meeting organization and periodic report collection. These processes were selected because they occur frequently, contain repeated operations, are relatively low-risk compared with finance or personnel workflows, and can be measured through time, status, reminders and evidence records. The pilot involved 28 internal records/requests over two weeks. Because the sample is limited, the results should be interpreted as indicative evidence of feasibility rather than as definitive proof of institutional-level impact.

4. Proposed Framework

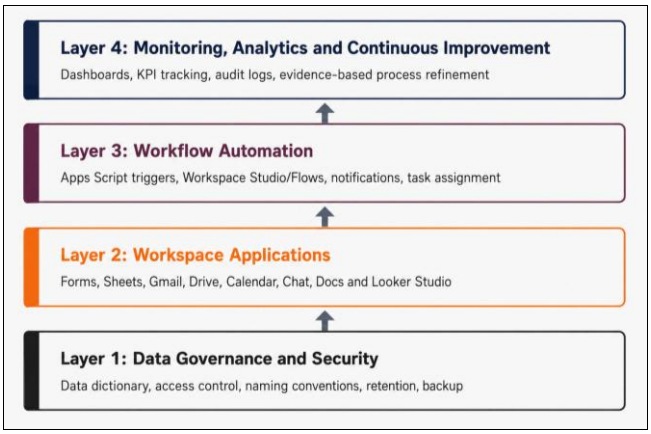

Fig 1: Four-layer architecture for Google Workspace-based workflow automation

The proposed framework is built on four layers. The first layer is data governance and security. It defines user roles, naming rules, folder structure, sharing permissions, data retention, backup and logs. The second layer consists of Google Workspace applications that collect, store and communicate information. Forms standardize inputs; Sheets becomes the structured workflow database; Drive stores evidence; Gmail and Chat deliver notifications; Calendar manages schedules; Docs supports templates; and Looker Studio or equivalent dashboards visualize progress.

The third layer is workflow automation. Apps Script handles event-based and time-based triggers, such as generating case codes, sending confirmation emails, creating folders, assigning tasks and sending reminders. Workspace Studio/Flows can be used as a higher-level layer for agentic or semi-automated actions such as classifying requests, drafting responses or summarizing meeting notes. The fourth layer is monitoring and continuous improvement through KPI dashboards, status charts and audit trails. Figure 1 illustrates this architecture.

5. Workflow Design and Prototype

The prototype follows a simple but complete workflow cycle: submit, validate, assign, execute, notify and report. A user submits a request or document through a standardized intake form. The form writes data into a structured sheet. The automation script checks required fields, generates a case identifier and creates a folder for evidence. A responsible person and deadline are assigned, after which automatic notifications are sent. As the workflow progresses, status changes are recorded in the sheet and reflected in the dashboard.

Fig 2: End-to-end workflow for request and document processing

Table 1: Core components of the prototype toolkit

Code	Component	Purpose	Expected output
F01	Intake form	Standardize input data	New record in workflow sheet
S01	Status sheet	Track case lifecycle	Status list and logs
A01	Automation script	Generate IDs, notify, remind	Emails, folders and reminders
R01	Dashboard	Monitor performance	Charts and KPI indicators
H01	User guide	Support adoption	Step-by-step operation manual

For incoming documents and task assignment, mandatory data include document code, sending unit, summary, urgency, deadline, attached evidence and proposed responsible person. For meetings, data include meeting title, objective, proposed time, participants, supporting documents and meeting mode. For periodic reporting, data include reporting period, unit, indicator values, evidence links and confirmation status. Each process uses the same governance logic: one source of structured data, standardized statuses, automatic notifications, clear responsibility and an auditable trail. Figure 2 summarizes the end-to-end workflow.

6. Pilot Results

The before-after comparison indicates meaningful operational improvements. Average processing time decreased from approximately 90-120 minutes to 25-40 minutes because confirmation emails, folders, calendar events and reminders were generated automatically. On-time completion increased from 65% to around 90-95% due to structured deadlines and automatic reminders. Data error rates decreased from 12-15% to 3-5% because required fields and controlled input formats reduced missing or inconsistent data. Audit trail coverage increased from about 40% to 100%, as every record had a case code, status and update log.

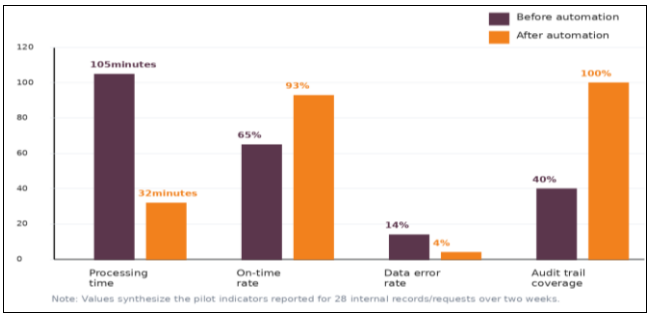

Fig 3: Performance comparison before and after automation in the pilot

Fig 4: Illustrative KPI dashboard for workflow monitoring

These results demonstrate the value of connecting automation with standardized data. The main benefit was not only faster work but also improved visibility. Managers could see how many requests were new, in progress, pending approval, overdue or completed. Staff members could find evidence through case folders rather than searching email threads. Figure 3 presents the pilot performance comparison, while Figure 4 shows an illustrative dashboard design for management monitoring.

7. Discussion

The findings support three lessons. First, low-code automation is most effective when workflows are redesigned before tools are configured. The most important design work occurred before scripting: defining mandatory fields, standard statuses, responsibility rules and evidence locations. Second, automation should preserve human control over substantive decisions. Scripts can notify, classify, remind and record, but approval, exception handling and content verification remain managerial responsibilities. This is especially important for training records, learner support and any process involving personal data.

Third, workflow automation can become a bridge between daily operations and data-driven management. Once each request has a status, owner, deadline and evidence link, dashboards can provide near-real-time insight into workload and bottlenecks. However, sustainability requires governance. If staff continue using informal channels outside the standardized form, data will again become dispersed. If one technical person is the only script maintainer, the solution becomes fragile. Therefore, implementation must include documentation, user training, backup, access control and at least two trained administrators.

8. Implementation Roadmap

A staged roadmap is recommended. In the first stage, the unit should select two or three high-frequency, low-risk processes and document their current and target workflows. In the second stage, forms, sheets, templates, folder structures and scripts should be created and tested using simulated data. In the third stage, a small pilot should be conducted with real users and measured against predefined indicators. In the fourth stage, the model should be institutionalized through internal guidance, standard operating procedures and training for a core automation team.

Priority should be given to workflows such as document/task assignment, meeting and action-item tracking, periodic report collection, internal support requests and learner support tickets. More sensitive workflows, including finance, personnel and formal academic records, should only be considered after governance, security and approval mechanisms are mature. The recommended KPI set includes average processing time, on-time completion rate, data error rate, user satisfaction, number of automatic reminders, percentage of reports generated automatically and percentage of records with complete logs.

9. Conclusion

This paper proposed and evaluated a Google Workspace-based framework for workflow automation in open and distance education management. The framework integrates

process standardization, data governance, Workspace applications, Apps Script automation, emerging Workspace Studio/Flows capabilities and KPI dashboards. Pilot results suggest that a low-cost and modular automation approach can reduce processing time, increase on-time completion, reduce data errors and improve traceability.

The contribution of the paper is practical and methodological. Practically, it provides a replicable model for units that already use Google Workspace but lack large-scale management software. Methodologically, it shows how workflow automation can be treated as an educational management innovation rather than merely a technical tool. Future work should expand the pilot to more workflows, evaluate long-term adoption, assess user satisfaction more rigorously and explore integration with learning management systems, student information systems and institutional data platforms.

Table 2: Recommended KPI set for workflow automation evaluation

Indicator	Measurement	Management meaning
Average processing time	Total completion time / number of cases	Operational efficiency
On-time completion rate	On-time completed cases / total cases x 100	Deadline control
Data error rate	Erroneous records / total records x 100	Input quality
User satisfaction	Likert-scale survey after use	User experience
Complete audit-log coverage	Cases with logs / total cases x 100	Traceability and accountability

10. References

1. Dumas M, La Rosa M, Mendling J, Reijers HA. Fundamentals of business process management (2nd ed.). Springer, 2018.
2. Google. Apps Script overview. Google for Developers, 2026. https://developers.google.com/apps-script/overview
3. Google Workspace. Introducing Google Workspace Studio: Agents for everyday work. Google Workspace Blog, 2025. https://workspace.google.com/blog/product-announcements/introducing-google-workspace-studio-agents-for-everyday-work
4. Google Workspace. Automate workflows with agentic AI powered by Gemini, 2026. https://workspace.google.com/studio/
5. Laudon KC, Laudon JP. Management information systems: Managing the digital firm (17th ed.). Pearson, 2022.
6. Miao F, Holmes W. Guidance for generative AI in education and research. UNESCO, 2023. https://unesdoc.unesco.org/ark:/48223/pf0000386693
7. OECD. OECD Digital Education Outlook 2023: Towards an effective digital education ecosystem. OECD Publishing, 2023. Doi: https://doi.org/10.1787/c74f03de-en
8. Van Der Aalst WMP. Process mining: Data science in action (2nd ed.). Springer, 2016.
9. Vom Brocke J, Rosemann M. (Eds.). Handbook on business process management. Springer, 2015.