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Digital transformation of Nepalese cooperatives through Aakash DMS

Evidence from workflow automation, digital records, and compliance readiness

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ABSTRACT

Cooperatives in Nepal provide savings, credit, and community-level financial services in areas where formal banking access can be limited. Many cooperatives still depend on paper-based records and manual workflows. These practices can slow document retrieval, delay loan processing, increase clerical errors, and reduce audit readiness. This study examines the operational effect of Aakash Document Management System (Aakash DMS) in Nepalese cooperatives. The study uses a mixed-methods pre–post design. Quantitative system-log data were collected from 512 cooperatives before and after Aakash DMS implementation. Staff interviews and workflow mapping were used to interpret the operational changes. The analysis focused on five indicators: document retrieval time, loan processing duration, manual error rate, compliance readiness, and administrative workload. The findings show clear operational improvements after implementation. Document retrieval time decreased from 2–5 hours to 5–20 seconds. Loan processing duration decreased from 3–7 days to 1–2 days. Manual error rates declined from 40–60% to 5–10%. Compliance readiness improved through automated documentation, expiry alerts, and digital record availability. Staff administrative workload decreased by about 70%, allowing more time for member service and field activities. The study shows that digital document management and workflow automation can strengthen cooperative governance, reduce administrative delay, and improve institutional accountability. The results also show that digital transformation in cooperatives depends on training, user acceptance, local connectivity, and careful data governance. Future work should examine long-term effects on member trust, financial performance, regulatory outcomes, and the possible use of artificial intelligence, optical character recognition, and secure digital archiving.

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1. Introduction

Cooperatives are an important part of Nepal's community-based financial system. They provide savings, credit, and livelihood support to members who may not have easy access to formal banking services. In rural and semi-urban areas, cooperatives often act as the first point of financial contact for households, small traders, farmers, and community groups. Despite this role, many cooperatives still use paper-based records and manual administrative procedures. These methods create practical problems. Documents may be difficult to find, loan files may move slowly between staff members, member records may be incomplete, and audit preparation may take longer than needed. These issues can reduce service quality and weaken internal governance. Digital transformation offers one way to address these problems. In organizational studies, digital transformation refers to the use of digital technologies to change work processes, information flows, and institutional practices. Vial describes digital transformation as a process in which digital technologies create changes in organizational operations, structures, and value creation [1]. Digital business strategy research also shows that digital technologies can reshape how organizations coordinate resources and deliver services [2].

For cooperatives, digital transformation is not only a technical change. It also affects record-keeping, loan review, compliance monitoring, staff workload, and member trust. A document management system can support these functions by storing records digitally, reducing file search time, standardizing workflows, and improving access to audit documents. Workflow-management research has long shown that automated workflows can coordinate tasks, documents, and information across participants according to defined procedural rules [3]. Business Process Management (BPM) literature also shows that process-aware systems can improve monitoring, coordination, and operational control [4].

In Nepal, the need for digital tools in cooperatives is linked to several practical challenges. These include limited digital literacy, uneven Internet connectivity, resistance to new systems, and the difficulty of changing long-established paper-based routines. These challenges are common in many developing-country settings where cloud-based systems are introduced into small or community-based institutions. Research on cloud adoption in developing economies shows that infrastructure, organizational readiness, data-security concerns, and user skills

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can influence whether cloud-based systems are adopted successfully [5].

This study evaluates the implementation of Aakash Document Management System (Aakash DMS) in Nepalese cooperatives. Aakash DMS includes digital Know Your Member (KYM) records, automated loan workflows, task management, expiry alerts, and cloud-based document archives. The study uses performance data from 512 cooperatives across Nepal, supported by workflow mapping and staff interviews. The purpose is to examine whether digital documentation and workflow automation can improve operational efficiency, compliance readiness, and service delivery. The study addresses three research questions:

1- How does digital workflow automation affect operational efficiency in Nepalese cooperatives?

2- How does centralized digital record-keeping affect compliance readiness and audit preparation?

3- How does error reduction influence staff workload, member service, and institutional trust?

The contribution of this study is practical and empirical. It provides evidence from a large network of cooperatives using the same digital management system. It also shows how document management, loan workflow automation, and compliance alerts can work together as a digital governance model for cooperative institutions.

2. Literature review

Digital transformation has become an important area of research in financial and community-based institutions. It refers to the use of digital technologies to improve work processes, information flows, service delivery, and organizational decision-making. In financial institutions, digital systems can support faster record access, clearer audit trails, standardized workflows, and better monitoring of routine operations [1,2].

For cooperative institutions, digital transformation has practical value because many services depend on accurate records and timely decisions. Savings, credit, member registration, loan assessment, document verification, and compliance reporting all require reliable information management. When these processes depend mainly on paper files, institutions may face delays, missing records, duplicated work, and higher clerical error rates. These problems can affect staff productivity, member satisfaction, and institutional trust.

Document management systems are one response to these challenges. A digital document management system allows records to be stored, indexed, searched, updated, and retrieved through a structured platform. This reduces dependence on physical files and improves access to information. In cooperative operations, such systems can support Know Your Member (KYM) records, loan files, membership documents, expiry reminders, audit preparation, and internal task assignment. Workflow-management research also shows that automated systems can improve task coordination by linking documents, staff responsibilities, and process steps in a defined sequence [3].

Cloud-based systems add another layer of value. They allow institutions to access records from different locations, support centralized backup, and reduce the need for local storage infrastructure. This can be useful for cooperatives with branches or field-based operations. However, cloud adoption also depends on Internet connectivity, staff skills, data-security practices, and organizational readiness. These factors are especially important in rural and semi-urban settings, where digital infrastructure may be uneven [5].

Digital financial inclusion research also supports the relevance of this study. Digital tools can expand access to financial services, reduce service delays, and improve institutional capacity when they are implemented with proper governance and user support [6]. For cooperatives, this means that digital transformation should not be understood only as software installation. It should be viewed as a change in administrative practice, service delivery, compliance culture, and information governance.

In South Asia, digital adoption in cooperative and rural financial institutions faces several barriers. These include limited digital literacy, resistance to changing established routines, irregular Internet access, and concerns about system reliability. In Nepal, these barriers are important because many cooperatives operate in diverse geographic conditions.

Cooperatives in urban centers may have stronger connectivity and more digitally experienced staff, while cooperatives in Hill and remote regions may face greater technical and training challenges. Existing studies on cooperative digitalization in Nepal and South Asia provide useful insights, but many remain limited in scale. Some studies focus on policy discussion, case-based evidence, or general digital-governance challenges. Fewer studies provide large-scale operational evidence from many cooperatives using the same digital management system. This creates a research gap.

There is still limited empirical evidence on how digital document management and workflow automation affect cooperative efficiency, compliance readiness, error reduction, and staff workload across a broad institutional sample.

This study addresses that gap by examining the use of Aakash Document Management System (Aakash DMS) in 512 cooperatives across Nepal. The study combines system-log data, workflow mapping, and staff interviews. This design allows the study to assess both measurable operational changes and practical implementation challenges. The literature therefore supports the need for a sector-level evaluation of digital workflow automation in Nepalese cooperatives.

3. Materials and methods

3.1. Study design

This study used a mixed-methods quasi-experimental design to evaluate the operational effect of Aakash Document Management System (Aakash DMS) in Nepalese cooperatives. The quantitative part of the study used a pre–post comparison of key performance indicators (KPIs). The comparison covered two periods: six months before and six months after the implementation of Aakash DMS. The qualitative part of the study used staff interviews and workflow mapping. These methods were used to explain the quantitative results, identify adoption challenges, and understand how staff experienced the transition from paper-based work to digital workflows.

This study did not use a randomized control group. Therefore, the findings should be interpreted as observed operational changes after implementation, not as proof that Aakash DMS was the only cause of every measured improvement. However, the pre–post design provides useful evidence because the same operational indicators were compared before and after the system was introduced.

Table 1: Methodological structure of the study.

Component	Description
Study design	Mixed-methods quasi-experimental pre–post study
Study period	Six months before and six months after Aakash DMS implementation
Sample size	512 Nepalese cooperatives
Sampling method	Purposive sampling
Main data sources	System logs, workflow mapping, staff interviews
Main indicators	Document retrieval time, loan processing duration, error rate, compliance readiness, workload
Main limitation	No randomized control group

3.2. Study setting

The study was conducted among cooperatives in Nepal that had implemented Aakash DMS. The participating institutions included savings and credit cooperatives and multipurpose cooperatives. These institutions provide member-based financial services, including savings, loans, member registration, documentation, and compliance-related record keeping.

The cooperatives operated in different geographic and institutional settings. The sample included institutions from both Terai and Hill regions. This helped capture differences in infrastructure, Internet access, staff digital skills, and operating conditions.

3.3. Sample selection

A total of 512 cooperatives were included in the study.

A purposive sampling method was used to select cooperatives with sufficient system use, operational activity, and data availability. The selection criteria were designed to ensure that the sample could provide reliable pre–post performance data. The cooperatives were selected using the following criteria:

1- Minimum digital adoption period - Each cooperative had actively used Aakash DMS for at least six months. This ensured that post-implementation data reflected actual system use rather than only the initial installation period.

2- Operational scale - Each cooperative met at least one minimum operational threshold: 2,000 or more active members, or 500 or more monthly financial transactions. This ensured that the cooperatives had enough operational activity for meaningful KPI analysis.

3- Data access and participation: Each cooperative agreed to provide anonymized system-log data and participate in structured staff interviews.

4- Geographic representation: Cooperatives were selected from both Terai and Hill regions to reflect differences in connectivity, infrastructure, and working conditions.

5- Institutional diversity: The sample included different cooperative types, including Savings and Credit Cooperatives (SACCOS) and multipurpose cooperatives.

3.4. Ethical statement

Participating cooperatives signed official agreements allowing the use of anonymized system data for research purposes. Staff interviews were conducted with informed consent. No personally identifiable member information was collected, reported, or analyzed. All data were reviewed in aggregated form.

The study focused on institutional workflow indicators rather than personal financial records. This approach reduced privacy risks and allowed the analysis to examine operational performance without identifying individual members or staff.

3.5. Aakash DMS intervention

Aakash DMS is a digital document management and workflow automation system designed for cooperative operations. The system supports digital Know Your Member (KYM) records, loan-document management, task assignment, expiry alerts, workflow tracking, and cloud-based document archiving.

In this study, Aakash DMS was evaluated as an operational and governance-support tool. The analysis focused on how the system affected record access, loan processing, error reduction, compliance readiness, and staff workload. The study did not evaluate software coding architecture or cybersecurity performance in technical depth. Those areas may require separate technical audits.

3.6. Data sources

The study used three main data sources:

1- System-log data: Used to measure document retrieval time, loan workflow duration, task completion, and digital record activity.

2- Workflow mapping: Used to compare paper-based and digital process steps before and after implementation.

3- Staff interviews: Used to understand user experience, adoption challenges, workload changes, and perceived service improvements.

The use of both quantitative and qualitative data strengthened the analysis. System logs provided measurable operational indicators, while interviews helped explain how the changes occurred in daily cooperative work.

3.7. Key performance indicators

The analysis used five key performance indicators. These indicators were selected because they reflect common operational problems in paper-based cooperative systems.

Table 2: Key performance indicators and measurement methods used for evaluating Aakash DMS implementation in Nepa-lese cooperatives.

KPI	Definition	Measurement method
Document retrieval time	Time required to locate and open a member or loan document.	Measured from staff query to file opening through system logs and workflow comparison.
Loan processing duration	Time from loan application submission to final disbursement.	Measured through workflow records before and after DMS implementation.
Manual error rate	Share of records containing missing, incorrect, or inconsistent information.	Estimated by comparing 50 pre-DMS physical loan files and 50 post-DMS digital entries with official member records.
Compliance readiness	Ability to provide complete, organized, and accessible documents for review or audit.	Assessed through document availability, expiry alerts, and staff interview responses.
Operational workload	Staff time spent on routine administrative tasks.	Evaluated through time-motion observations and staff interviews.

3.8. Data validation and analysis protocol

The data validation protocol followed the definitions used in the original study. Document retrieval time was measured as the period from a staff query to the opening of the relevant file. Loan processing time was measured from application submission to final disbursement. Error rate was assessed by comparing sampled physical and digital records with official member records. Operational workload was evaluated through time-motion studies and staff interviews.

The analysis compared pre-DMS and post-DMS values for each KPI. The percentage improvement was calculated using the following general formula:

$$\text{Improvement} = \frac{\text{Pre-DMS value-Post-DMS value}}{\text{Pre-DMS value}} \times 100 \quad (1)$$

This formula was used for indicators where a lower value reflects better performance, such as retrieval time, processing time, error rate, and workload. For compliance readiness, the study used a qualitative classification because the original data described the change as moving from low readiness to high readiness. This indicator was supported by automated documentation, digital archives, expiry alerts, and interview responses.

3.9. Methodological limitations

The study has several methodological limitations. First, the sample was selected purposively rather than randomly. This means the findings may not represent all cooperatives in Nepal. Second, the study used a pre–post design without a separate control group. Other factors, such as staff training or management changes, may have contributed to some improvements. Third, the error-rate comparison used a limited file sample: 50 pre-DMS physical loan files and 50 post-DMS digital entries. This provides useful evidence but should not be treated as a full audit of all records. Fourth, compliance readiness was assessed using operational indicators and staff feedback, not through an independent regulatory audit.

Despite these limitations, the study provides useful empirical evidence because it uses real operational data from a large sample of cooperatives. It also combines system logs, workflow mapping, and staff interviews, which gives a more complete view of digital adoption than a single-method design.

4. Results

The results are presented according to the five key performance indicators used in the study: document retrieval time, loan processing duration, manual error rate, compliance readiness, and administrative workload. The findings are based on operational data from 512 cooperatives that used Aakash DMS for at least six months.

The results show clear improvements after the transition from paper-based procedures to digital document management and automated workflows. These improvements should be interpreted as observed pre–post changes within the participating cooperatives. Because the study did not include a randomized control group, the results should not be overstated as proof of full causality. However, the size and consistency of the changes indicate that Aakash DMS was closely associated with improved operational performance.

4.1. Operational efficiency

Operational efficiency was assessed through two indicators: document retrieval time and loan processing duration. Before Aakash DMS implementation, staff often needed 2–5 hours to retrieve member or loan documents from physical files. After implementation, document

retrieval time decreased to 5–20 seconds. This represents a reduction of more than 99%. The result indicates that digital indexing and cloud-based document access substantially reduced the time required for routine file searches.

Loan processing also improved. Before implementation, loan processing usually required 3–7 days, from application submission to final disbursement. After Aakash DMS implementation, this time decreased to 1–2 days. This represents a reduction of about 50–60%. The improvement can be linked to structured loan workflows, faster document access, and clearer task movement between staff members.

These findings show that document management and workflow automation can reduce administrative delay in cooperative operations. Faster retrieval and processing do not only improve staff efficiency. They may also improve member experience because members can receive faster responses during loan and documentation processes.

4.2. Error reduction

Manual error rate was assessed by comparing pre-DMS physical loan files and post-DMS digital entries with official member records. The submitted study reports that manual error rates decreased from 40–60% before implementation to 5–10% after implementation. This represents an estimated reduction of about 80–85%. The reduction in errors is important for cooperative governance. Paper-based records can create errors through missing documents, repeated manual entry, unclear handwriting, incomplete member details, and inconsistent file updates. Digital records reduce these risks by standardizing data entry, linking documents to member profiles, and making records easier to check. The result also has compliance value. Lower error rates can make internal review and audit preparation more reliable. However, the result should be presented cautiously because the error-rate comparison was based on a defined file sample rather than a complete audit of every cooperative record.

4.3. Compliance readiness

Compliance readiness improved after Aakash DMS implementation. In the submitted results, compliance readiness changed from low in the pre-DMS baseline to high in the post-DMS measurement. This improvement was linked to automated documentation, expiry alerts, task tracking, and better document availability.

Digital compliance support is important for cooperatives because member files, Know Your Member (KYM) records, loan documents, approvals, and expiry dates must be organized and accessible. When these records are stored only in paper form, audit preparation can take longer and may depend heavily on individual staff knowledge. A digital system can reduce this dependency by creating a shared and searchable record structure. The result suggests that Aakash DMS supported stronger audit preparedness. However, compliance readiness should be understood as an operational indicator. The study does not report an independent regulatory audit. Therefore, the finding should be stated as improved internal readiness rather than confirmed regulatory compliance.

4.4. Workload optimization

Administrative workload decreased after Aakash DMS implementation. The submitted study reports that staff workload decreased by nearly 70%, with remaining administrative workload estimated at about 30% of the pre-DMS level. This reduction was mainly linked to faster file retrieval, automated reminders, structured task management, and fewer repeated manual checks. Staff could spend less time searching for documents and more time on member service, field visits, follow-up, and planning activities.

This finding is important because digital transformation should not only reduce processing time. It should also improve how staff time is used. In cooperative institutions, staff capacity is often limited. Reducing repetitive administrative work may allow cooperatives to focus more on member-facing services and governance tasks.

Table 3: Operational improvements after Aakash DMS implementation.

Metric	Pre-DMS baseline	Post-DMS measured value	Reported improvement	Interpretation
Document retrieval time	2–5 hours	5–20 seconds	>99% reduction	Digital indexing and search reduced file retrieval delays.
Loan processing duration	3–7 days	1–2 days	50–60% reduction	Automated workflows shortened the loan-processing cycle.
Manual error rate	40–60%	5–10%	80–85% reduction	Standardized digital records reduced clerical and documentation errors.
Compliance readiness	Low	High	Substantial increase	Digital records, alerts, and documentation improved audit preparation.
Administrative workload	100%	Approximately 30%	Approximately 70% reduction	Routine administrative effort decreased after workflow automation.

The results show that Aakash DMS was associated with improvements across all measured indicators. The strongest improvement was found in document retrieval time, followed by error reduction and administrative

workload reduction. Loan processing also improved, although it remained dependent on institutional approval procedures and staff review.

5. Discussion

The findings show that Aakash DMS was associated with clear operational improvements in the participating cooperatives. The largest improvement was observed in document retrieval time, which decreased from several hours to a few seconds. Loan processing time, manual error rates, and administrative workload also decreased after implementation. These changes suggest that digital document management and workflow automation can address several weaknesses of paper-based cooperative systems. A main explanation for these improvements is the centralization of records. In a paper-based system, staff must search physical files, verify documents manually, and track loan or member records through separate registers. This process can create delays and errors. Aakash DMS reduced these problems by placing member documents, KYM records, loan files, expiry alerts, and task updates within a structured digital system. This allowed staff to access information faster and complete routine tasks with fewer repeated steps.

The reduction in loan processing time is also important. In cooperative institutions, loan processing depends on document completeness, member verification, approval steps, and disbursement procedures. When these steps are handled manually, delays can occur at several points. The post-DMS reduction from 3–7 days to 1–2 days suggests that automated workflows helped improve task movement and document availability. This does not mean that all loan decisions became automatic. Rather, the system appears to have improved the administrative process surrounding loan review and approval. This decrease in manual error rates is another important finding. Errors in cooperative records can affect member service, loan tracking, compliance preparation, and institutional trust. The observed reduction from 40–60% to 5–10% suggests that digital record structures helped reduce missing, duplicated, or inconsistent information. This finding is consistent with workflow-management theory, which shows that structured digital processes can reduce uncertainty and improve coordination between tasks, documents, and users [3].

The improvement in compliance readiness is also significant for cooperative governance. Cooperatives must maintain member records, loan files, approvals, and supporting documents in an organized form. When records are incomplete or difficult to locate, audit preparation becomes slower and less reliable. Aakash DMS supported compliance readiness through digital archives, automated reminders, and improved document availability. However, this finding should be interpreted as an improvement in internal audit preparedness, not as proof of full regulatory compliance. The study did not report an independent external compliance audit. The reduction in administrative workload has practical value. The study reports that routine administrative workload decreased by about 70%.

This means staff could spend less time searching files, checking manual records, and repeating documentation tasks. In cooperative settings, this can free time for member service, field visits, loan follow-up, and planning. This is important because digital transformation should not only introduce new software. It should improve how people work and how institutions serve their members.

The study also shows that digital transformation in cooperatives depends on more than system installation. Staff training, local connectivity, management support, and user acceptance remain important. Some older staff members may need more time to adjust to digital workflows. Cooperatives in remote or Hill regions may also face unstable Internet access. These challenges do not reduce the value of the system, but they show that digital adoption requires continuous support and practical training.

The findings contribute to the literature in two ways. First, the study provides empirical evidence from a large group of cooperatives using the same digital management system. Many studies on cooperative digitalization in South Asia are based on small cases, policy discussion, or general observations. This study adds operational evidence from 512 cooperatives, which gives the findings stronger practical relevance. Second, the study shows how document management, workflow automation, and compliance alerts can work together as a digital governance tool.

The results also support the broader idea that digital transformation can strengthen institutional accountability. Faster document retrieval, fewer errors, and clearer workflows make it easier to review decisions and track records. This can improve transparency inside the cooperative. It can also help managers detect incomplete files, pending tasks, or expired documents earlier.

At the same time, the findings should be interpreted with caution. The study used purposive sampling, not random sampling. Therefore, the results may not represent every cooperative in Nepal. The study also used a pre–post design without a control group. Other factors, such as staff training, management attention, or process redesign, may have contributed to the improvements. In addition, the error-rate analysis was based on sampled files rather than a complete review of all records. These limitations should be clearly stated so that the findings remain credible. Overall, the discussion indicates that Aakash DMS can be understood as more than a document-storage tool. It functions as a workflow, compliance, and governance-support system. For cooperatives with high document volume and member-service demands, such systems may help reduce delay, improve record reliability, and support long-term institutional sustainability. Future research should test these findings over a longer period and examine whether operational improvements also lead to better member satisfaction, stronger financial performance, and improved regulatory outcomes.

5.1. Novelty and contribution

This study is distinctive because it evaluates digital transformation using operational data from a large cooperative sample. The inclusion of 512 cooperatives provides broader evidence than a single case study. The use of system logs, workflow mapping, and staff interviews also gives the study a stronger methodological basis than a purely descriptive report. The main contribution is the evaluation of Aakash DMS as a practical digital governance model for cooperative institutions. The study shows that digital document management, automated loan workflows, expiry alerts, and cloud-based archives can improve daily operations. These features are especially relevant in cooperative environments where record accuracy, member service, and audit readiness are central to institutional trust.

5.2. Challenges and limitations

The study identified several implementation challenges. Limited digital literacy among some staff members affected the speed of adoption. Internet connectivity was also inconsistent in some remote areas. These issues are common in developing-country digital transformation contexts and should be considered when similar systems are introduced in other regions. The study also has methodological limitations. The sample was purposive. The design was pre–post rather than randomized. The error-rate assessment used selected file samples. Compliance readiness was measured as an internal operational indicator, not through independent regulatory audit results. These limitations do not remove the value of the findings, but they should guide how the results are interpreted.

6. Conclusion and Future Work

This study examined the role of Aakash Document Management System (Aakash DMS) in the digital transformation of Nepalese cooperatives. The analysis used operational data from 512 cooperatives, supported by workflow mapping and staff interviews. The findings show that the transition from paper-based records to digital document management and automated workflows was associated with clear improvements in operational efficiency, record accuracy, compliance readiness, and staff workload management. The largest improvement was observed in document retrieval time, which decreased from 2–5 hours to 5–20 seconds. Loan processing duration decreased from 3–7 days to 1–2 days. Manual error rates decreased from 40–60% to 5–10%, while administrative workload decreased by about 70%. Compliance readiness also improved through digital archives, automated reminders, task tracking, and easier access to required documents. These findings suggest that Aakash DMS can help address long-standing operational problems in cooperative institutions. Paper-based systems often create delays, missing records, repeated manual work, and audit-preparation difficulties. Aakash DMS reduced these problems by organizing documents digitally and linking them with workflow steps. This improved the speed, accuracy, and traceability of routine cooperative operations.

This study also indicates that digital transformation in cooperatives should be understood as an institutional process, not only as software adoption. The success of such systems depends on staff training, user acceptance, management support, Internet connectivity, data security, and continuous technical assistance. These factors are especially important in rural and semi-urban contexts where digital infrastructure may vary. The findings support the view that Aakash DMS can serve as a scalable digital governance model for cooperatives operating in similar socio-economic and infrastructural conditions. However, the results should be interpreted with caution. The study used purposive sampling and a pre–post design without a randomized control group. Therefore, the findings show strong observed improvements after implementation, but they should not be treated as proof that all improvements were caused only by the software. Future studies should include control groups, longer observation periods, and independent compliance assessments where possible.

Future research should examine the long-term effect of Aakash DMS on member satisfaction, loan recovery performance, staff productivity, institutional trust, and regulatory audit outcomes. Further development may also include AI-based credit-risk assessment, OCR-based extraction of historical documents, and blockchain-supported secure archiving. These tools should be evaluated carefully before adoption, especially in relation to data privacy, cybersecurity, transparency, and cooperative governance.

References

[1] Vial G (**2019**) "Understanding digital transformation: A review and a research agenda" *The Journal of Strategic Information Systems* (vol. 28, no. 2, pp. 118–144) https://doi.org/10.1016/j.jsis.2019.01.003

[2] Bharadwaj A, El Sawy OA, Pavlou PA, Venkatraman N (**2013**) "Digital business strategy: Toward a next generation of insights" *MIS Quarterly* (vol. 37, no. 2, pp. 471–482) https://doi.org/10.25300/MISQ/2013/37:2.3

[3] Georgakopoulos D, Hornick M, Sheth A (**1995**) "An overview of workflow management: From process modeling to workflow automation infrastructure" *Distributed and Parallel Databases* (vol. 3, no. 2, pp. 119–153) https://doi.org/10.1007/BF01277643

[4] Reijers HA (**2021**) "Business process management: The evolution of a discipline" *Computers in Industry* (vol. 126, pp. 103404) https://doi.org/10.1016/j.compind.2021.103404

[5] Yeboah-Boateng EO, Essandoh KA (**2014**) "Factors influencing the adoption of cloud computing by small and medium enterprises in developing economies" *International Journal of Emerging Science and Engineering* (vol. 2, no. 4, pp. 13–20)

[6] Tay L-Y, Tai H-T, Tan G-S (**2022**) "Digital financial inclusion: A gateway to sustainable development" *Heliyon* (vol. 8, no. 6, pp. e09766) https://doi.org/10.1016/j.heliyon.2022.e09766