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Navigating the Transition: A Qualitative Inquiry into Hybrid Administrative Systems in a Regional Indonesian Junior High School

Sisi Suksesiawati[1], Sudarwan Danim[1], Asti Putri Kartiwi[1]
[1]Universitas Bengkulu, Bengkulu, Indonesia

Corresponding author e-mail: sisi264@pendidik.kesetaraan.belajar.id

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Abstract: While extensive scholarship addresses either fully manual or comprehensively digitalized school administration, transitional phases where both systems coexist remain critically underexplored. This qualitative single-case study examines how State Junior High School 03 of Central Bengkulu navigates digital transformation, revealing operational dynamics, efficiency implications, and strategic challenges inherent in hybrid administrative systems. Through interviews, document analysis, and observation with six administrative personnel, the investigation uncovers that digitalization remains confined to student affairs (Dapodik platform) and financial management (ARKAS system), whereas personnel administration, infrastructure management, and correspondence persist manually. This bifurcation creates duplication of effort, simultaneously enabling regulatory compliance while undermining operational efficiency. Four interconnected barriers emerged: intermittent internet connectivity, heterogeneous digital competencies, constrained budgets, and psychological resistance rooted in competence anxieties. These findings challenge linear stage models of technology adoption by demonstrating that hybrid systems in resource-constrained contexts function as semi-permanent organizational equilibria rather than temporary transitions. Theoretically, the study extends digital transformation scholarship by establishing hybridity as a distinct organizational form warranting its own analytical frameworks, not merely a developmental stage. Practically, findings inform context-sensitive implementation strategies for regional schools, emphasizing sequential roadmaps prioritizing high-impact domains, sustained competency development, and change management acknowledging staff apprehensions. This research contributes a reconceptualization of hybrid administration as potentially enduring rather than transitional, necessitating strategic management beyond linear digitalization assumptions.

Keywords: Digital Transformation, Hybrid Administrative Systems, Regional Schools, School Administration, Transitional Challenges

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A. Introduction

Contemporary educational administration confronts unprecedented demands for efficiency, accountability, and transparency demands that digital technologies ostensibly address through automated workflows, real-time data analytics, and cloud-based collaboration platforms. Indonesian education policy has responded accordingly, mandating digital systems such as Dapodik for student information management and ARKAS for financial accountability across all public schools. Yet this policy directive presumes conditions that many regional schools cannot fulfil: reliable internet infrastructure, technologically proficient staff, adequate hardware, and institutional cultures receptive to systemic change. From a socio-technical systems perspective (Orlikowski, 2000; Rahman & Karim, 2024), successful digital transformation requires not merely technological deployment but dynamic alignment among technology, organizational structures, human capacities, and contextual affordances. The resulting implementation gap raises fundamental questions about how schools actually experience digital transformation when policy aspirations encounter operational constraints a phenomenon best understood through technology-in-practice frameworks that examine how technologies are enacted within specific material and social configurations.

Existing scholarship illuminates various dimensions of this transformation challenge. Large-scale quantitative studies demonstrate positive correlations between digital administrative systems and organizational effectiveness, documenting improved data accuracy, accelerated processing times, and enhanced decision-making capabilities in well-resourced urban schools (Chen & Zhang, 2023; Park et al., 2024; Williams & Thompson, 2023). These findings align with technology acceptance models and institutional theory, suggesting that when technological infrastructure, human capacity, and organizational readiness converge, digital systems deliver anticipated benefits. Conversely, implementation studies from developing contexts reveal systematic barriers—inadequate connectivity, insufficient training, limited budgets, and cultural resistance—that impede successful adoption (Kumar & Sharma, 2024; Nguyen et al., 2023; Silva & Costa, 2024). This body of work establishes that context profoundly shapes technology implementation outcomes.

However, these divergent streams address endpoints rather than transitions. We understand relatively well what fully manual and fully digital administrative systems entail, yet the transitional space between them remains empirically underdeveloped. Regional schools in Indonesia rarely leap from paper-based to fully integrated digital operations; instead, they occupy a prolonged hybrid state where some functions digitalize while others persist manually. This liminal condition raises questions that existing literature cannot adequately answer: How do hybrid systems actually function in daily operations? What efficiency trade-offs emerge when staff maintain parallel

digital and manual processes? Which administrative domains prove most resistant to digitalization, and why? How do resource constraints shape decisions about sequential implementation? What psychological and organizational dynamics sustain resistance despite policy mandates?

This study addresses four research questions: (1) How does the school operationalize hybrid administrative systems in daily operations? (2) What are the efficiency implications of maintaining parallel digital and manual processes? (3) Which factors explain differential adoption rates across administrative domains? (4) How do institutional and individual-level dynamics, including change management approaches, sustain or mitigate resistance to digital transformation?

B. Methods

This investigation employed qualitative methodology through a single-case study design, selected for its capacity to illuminate complex organizational phenomena within real-world contexts where boundaries between phenomenon and context blur (Yin, 2018). The approach aligns with the research aim of understanding how digital transformation unfolds within the specific constraints of a regional Indonesian school, where contextual factors, infrastructure limitations, resource availability, local culture fundamentally shape implementation dynamics. Single-case designs prove particularly valuable when examining representative or revelatory cases (Yin, 2018); State Junior High School 03 of Central Bengkulu qualifies on both criteria. It is representative of regional public schools navigating mandated digitalization amid operational constraints common throughout Indonesia's less-urbanized districts, where approximately 60% of junior secondary schools face similar infrastructure and capacity limitations (Hartono et al., 2024). It is revelatory because it makes visible the everyday mechanisms through which hybrid systems persist workarounds, duplication patterns, resistance dynamics—that remain obscured in aggregate statistical analyses. The intensive examination of one information-rich case enables depth of analysis that would be impossible across multiple sites, permitting thick description of socio-technical interactions and identification of subtle organizational processes.

The research site, State Junior High School 03 of Central Bengkulu, Central Bengkulu Regency, Bengkulu Province, Indonesia, serves 458 students with 34 teaching staff and six administrative personnel. Located approximately 45 kilometres from the provincial capital, the school experiences intermittent internet connectivity, seasonal electricity disruptions, and limited access to technical support infrastructure that characterizes regional Indonesian schools. Participants included six administrative staff members selected through purposive sampling to capture diverse perspectives across administrative functions and hierarchical positions: the school principal (responsible for

overall institutional leadership and policy implementation), the administrative head (supervising day-to-day administrative operations), two vice-principals (managing academic and student affairs respectively), the Dapodik operator (maintaining the national student database), and one general administrative staff member (handling correspondence and records). This configuration ensured comprehensive coverage of all administrative domains while remaining manageable for intensive qualitative analysis. Six participants constitute methodological sufficiency for this single-case study because: (1) they represent complete coverage of administrative roles, achieving data saturation whereby additional participants would not introduce new perspectives; (2) prolonged engagement with each participant (60-90 minute interviews plus observational data) generated rich, detailed accounts; (3) triangulation across participants, documents, and observations enabled verification and cross-checking; and (4) established qualitative research principles prioritize depth over breadth, with sufficiency determined by analytical saturation rather than statistical representativeness (Miles et al., 2020).

Data collection occurred through three complementary methods between September and November 2024. Semi-structured interviews constituted the primary data source, conducted individually with each participant for 60-90 minutes using interview guides tailored to their specific roles yet maintaining consistent core questions about digital system use, operational challenges, efficiency perceptions, and resistance factors. Interviews were audio-recorded with informed consent and transcribed verbatim, generating approximately 180 pages of transcript data. Document analysis supplemented interview data, examining policy documents (ministerial regulations mandating digital systems), operational records (Dapodik entries, ARKAS reports, manual ledgers), and internal communications (memos, meeting minutes) to triangulate participant accounts with material evidence of actual practices. Direct observation during five site visits documented how staff members actually worked with digital and manual systems, capturing informal workarounds, collaborative problem-solving, and moments of technological friction that might not emerge through interviews alone.

Data analysis followed the interactive model developed by Miles, Huberman, and Saldaña (2020), involving iterative cycles of data reduction, display, and conclusion drawing. Initial coding employed both deductive codes derived from the research questions (administrative domains, efficiency indicators, resistance factors) and inductive codes emerging from the data (workarounds, duplication patterns, psychological responses). Subsequent focused coding organized these initial codes into broader analytical categories: operational dynamics of hybrid systems, efficiency trade-offs, implementation barriers, and resistance mechanisms. Pattern matching identified recurrent themes across participants and data sources, while deviant case analysis attended to contradictory evidence that complicated emerging patterns. Throughout analysis, I maintained an audit trail documenting coding decisions and analytical

reasoning, and conducted member checking by sharing preliminary findings with two participants to verify interpretive accuracy.

Trustworthiness was established through multiple strategies aligned with Lincoln and Guba's (1985) criteria. Credibility was enhanced through prolonged engagement (five months from initial access through final member checking), triangulation across data sources and participant perspectives, and peer debriefing with two educational administration scholars who reviewed coding schemes and challenged interpretive leaps. Analytical transferability was supported through thick description of the research context, participant characteristics, and procedural details sufficient for readers to assess applicability to their own contexts—recognizing that analytical insights, rather than statistical generalizations, constitute the appropriate standard for qualitative case study research. Dependability derived from the documented audit trail and explicit articulation of analytical decisions. Confirmability was pursued through reflexive journaling that tracked how my positionality as a graduate student in educational administration might shape interpretations, alongside systematic searching for disconfirming evidence rather than exclusively supporting data that confirmed emerging themes.

Ethical considerations guided all research activities. The study received institutional approval from the University of Bengkulu Research Ethics Committee (Protocol 2024-087). Participants provided written informed consent after receiving detailed information about research purposes, procedures, voluntary participation, and confidentiality protections. All identifying information was removed from transcripts and field notes; pseudonyms were used in reporting results. Digital recordings were encrypted and stored securely, accessible only to the research team, and will be destroyed upon completion of the study as specified in consent documents. Participants retained rights to withdraw from the study without penalty and to review their interview transcripts, though none exercised these options. Throughout fieldwork and analysis, I remained attentive to power dynamics, recognizing that my position as an external researcher might influence what participants felt comfortable disclosing, particularly regarding implementation challenges that could reflect negatively on their professional competence.

C. Results and Discussion

Operational Dynamics of Hybrid Administration (RQ1)

Field investigation revealed systematic bifurcation across administrative domains, directly addressing Research Question 1 regarding how the school operationalizes hybrid systems. Student affairs exhibited the most complete digitalization, driven by mandatory compliance with the national Dapodik system. The school's dedicated operator

maintained comprehensive digital records of student enrolment, attendance, demographic information, and academic progression, updated quarterly to satisfy Ministry reporting requirements. Similarly, financial management operated primarily through the ARKAS platform, where budget allocations, expenditure tracking, and accountability reporting occurred digitally to comply with School Operational Assistance fund (BOS) oversight mechanisms. These domains achieved functional digitalization not through autonomous institutional initiative but through external policy enforcement backed by tangible consequences delayed fund disbursement for incomplete ARKAS submissions, and enrolment reporting that determined per-student funding allocations.

Conversely, personnel administration, infrastructure management, and general correspondence remained predominantly manual. Staff attendance still relied on physical signature sheets maintained in the administrative office; personnel files consisted of paper folders containing appointment letters, performance evaluations, and professional development certificates stored in locked cabinets. Infrastructure inventories existed as handwritten ledgers recording equipment purchases, maintenance schedules, and disposal records, periodically photographed for informal backup but never systematically digitized. Correspondence internal memos, parent communications, district directives cycled through manual routing systems where physical documents moved between offices accumulating signatures and annotations before filing in chronological folders. The administrative head explained this persistence pragmatically: These areas don't have mandatory digital systems like Dapodik or ARKAS. We know we should digitalize eventually, but there's no immediate pressure, and honestly, we're already overwhelmed managing the systems we're required to use.

This bifurcation aligns with institutional theory's prediction that organizations respond to coercive pressures from authoritative bodies (DiMaggio & Powell, 1983). Schools digitalize domains where external enforcement mechanisms exist while maintaining manual processes in areas lacking such pressure. However, this rational-bureaucratic explanation overlooks how hybrid operations generate their own complexities. Staff members develop elaborate workarounds navigating between systems: the Dapodik operator maintained a manual spreadsheet cross-referencing student ID numbers with physical file locations because Dapodik's search function proved unreliable during internet outages. Financial staff printed ARKAS reports for manual filing because district auditors occasionally requested physical documentation despite official digital records. These redundancies suggest that hybrid systems sometimes amplify rather than reduce administrative burden, contradicting efficiency narratives that assume any digitalization improves operations.

Recent scholarship corroborates these findings while also revealing contextual variations. Anderson et al. (2023) documented similar technological fragmentation in UK secondary

schools implementing multiple incompatible digital systems, finding that staff invested substantial time in manual data transfers between platforms, effectively creating triple documentation burdens aligning with our observations of duplication. Martinez and Rodriguez (2024) observed that Spanish rural schools-maintained hybrid systems for years rather than months, with digitalization progressing sporadically based on funding availability and staff turnover rather than strategic planning and extending our finding that hybridity persists as semi-permanent equilibrium. However, Park et al. (2024) found that Korean schools with mandatory digital systems nonetheless preserved parallel manual processes when staff perceived digital systems as unreliable challenging our explanation by suggesting psychological factors matter beyond mere policy enforcement. These convergent yet nuanced findings across diverse national contexts suggest that hybrid administration represents a widespread phenomenon rather than isolated implementation failure, warranting recognition as a distinct organizational form requiring its own theoretical frameworks.

Efficiency Implications and Duplication Paradoxes (RQ2)

Participants articulated deeply ambivalent assessments of how digitalization affected work efficiency, directly addressing Research Question 2 regarding operational efficiency implications of maintaining parallel systems. In domains with functioning digital systems, staff acknowledged specific improvements: automated calculations in ARKAS eliminated manual arithmetic errors previously requiring laborious rechecking; Dapodik's standardized data entry reduced inconsistencies in student records; digital archiving enabled faster retrieval compared to searching physical file cabinets. These benefits materialized primarily during optimal conditions stable internet connectivity, functioning equipment, and routine operations requiring no troubleshooting. However, these optimal conditions occurred inconsistently. Internet outages disrupted cloud-based workflows multiple times weekly, sometimes for hours or entire days, forcing staff to either halt operations or revert to manual processes, then later reconcile discrepancies once connectivity returned. The Dapodik operator described a recurring frustration: 'I spend hours entering student data, then the connection drops right before I can save, and everything disappears. So now I enter everything in Excel first, then copy to Dapodik when the connection seems stable. It takes twice as long as the old paper system.'

This duplication extended beyond technological workarounds to institutional requirements. Despite maintaining digital personnel files as an informal initiative, the administrative head preserved complete paper files because district personnel office audits required physical documentation bearing original signatures. Financial records existed simultaneously in ARKAS (for central government oversight), printed spreadsheets (for school committee review), and handwritten ledgers (for internal tracking), with each format serving distinct audiences and purposes that couldn't be

consolidated. Correspondence operated similarly: emails required printed copies for formal filing, and physical memos required digital scanning for backup storage. Rather than replacing manual processes, digital systems frequently added parallel documentation requirements.

These findings problematize simplistic efficiency narratives surrounding administrative digitalization. While technological optimists emphasize automation benefits and digital sceptics highlight implementation costs, the lived reality proves more paradoxical: digitalization simultaneously improves and undermines efficiency depending on operational conditions and institutional context. Chen and Zhang (2023) documented similar paradoxes in Chinese vocational schools, where digital systems improved routine operations but dramatically increased workload during system malfunctions or version updates, sometimes requiring manual restoration of corrupted databases—aligning with our duplication findings. Silva and Costa (2024) observed that Brazilian schools implementing management information systems often experienced initial efficiency declines as staff learned new workflows, with efficiency gains materializing only after sustained use a temporal pattern that many under-resourced schools could not sustain given competing demands, extending our understanding of context-dependency. However, Williams and Thompson (2023) found that even well-implemented school information systems generated efficiency trade-offs, streamlining some processes while creating new complexities around data privacy compliance, system maintenance, and staff training challenging the assumption that adequate resources alone resolve efficiency paradoxes. Notably, one participant offered a dissenting perspective that complicates this efficiency ambivalence. The vice-principal for student affairs argued that digital systems would prove more efficient 'if we had reliable internet and proper training,' framing current inefficiencies as implementation failures rather than inherent technological limitations. This counterfactual view highlights that efficiency assessments involve not only objective productivity metrics but also subjective judgments about whether to attribute difficulties to technology itself, implementation quality, or contextual constraints.

Barriers to Digital Transformation (RQ3)

Four interconnected barriers emerged as primary obstacles to comprehensive digital transformation, answering Research Question 3 regarding factors explaining differential adoption rates across administrative domains. Infrastructure limitations constituted the most immediately visible constraint. Internet connectivity essential for cloud-based systems like Dapodik and ARKAS proved intermittent and unreliable. The school subscribed to the only available commercial internet provider in the area, which delivered advertised speeds inconsistently and experienced frequent outages attributed to weather damage, equipment failures, and regional network congestion. During

extended outages, staff could not access cloud-based systems, disrupting deadlines for government reporting and creating work backlogs. Electricity supply, while more stable than internet, still experienced occasional disruptions during severe weather, and the school lacked backup generators, rendering desktop computers temporarily unusable. Hardware inventory proved similarly constrained: four desktop computers shared among six administrative staff meant that simultaneous digital work required negotiating access, and aging equipment required frequent repairs that the school's limited technical budget struggled to accommodate.

Human resource capacity represented a subtler but equally significant barrier. Administrative staff exhibited widely varying digital competencies. The Dapodik operator, relatively young and technology-comfortable, navigated complex database functions competently and troubleshot minor technical issues independently. Conversely, senior administrative staff who had worked in manual systems for decades possessed limited computer skills, struggled with counterintuitive interface designs, and expressed anxiety about making errors that might corrupt important data. This heterogeneity meant that even when digital systems functioned properly, some staff required extensive assistance completing basic tasks, effectively limiting digitalization to domains manageable by digitally proficient personnel. Training opportunities existed sporadically occasional workshops organized by the district education office—but these proved inadequate for developing sustained competency given their infrequency, generic content that rarely addressed school-specific systems, and lack of follow-up support when participants encountered problems applying training to their work contexts.

Financial constraints fundamentally shaped digitalization trajectories. The school's discretionary budget derived primarily from BOS funds, which prioritized instructional materials, facility maintenance, and student welfare activities. Administrative technology computer purchases, software licenses, internet subscriptions competed with these higher-priority needs and typically received minimal allocation. The principal explained: 'When we must choose between textbooks and computers, between building repairs and software, the decision is obvious. Learning comes first. Administration just has to make do.' This prioritization logic appears defensible from a pedagogical perspective yet ensures that administrative digitalization proceeds incrementally, constrained by whatever marginal funds remain after addressing instructional needs. Consequently, the school could not invest in enterprise-level integrated systems that might resolve interoperability problems, nor hire technical support staff who might maintain systems and train personnel, instead relying on ad hoc solutions and volunteer expertise.

Psychological resistance operated more subtly than material constraints but proved equally significant. Several participants expressed nostalgia for manual systems, describing them as 'familiar,' 'reliable,' and 'under our control' compared to digital

systems perceived as 'complicated,' 'unpredictable,' and 'dependent on technology we don't understand.' This framing reveals underlying anxieties about competence and autonomy. Manual systems allowed staff to exercise mastery developed over years of practice; digital systems disrupted this mastery, positioning staff as novices repeatedly encountering unfamiliar interfaces and incomprehensible error messages. One senior administrator stated: 'I've been doing this work for twenty years. With paper, I know exactly what to do. With computers, I feel incompetent, always asking for help like I don't know my job.' This erosion of professional identity and competence creates emotional investment in preserving manual systems that transcends rational efficiency calculations. Additionally, manual systems afforded flexibility that digital systems sometimes constrained. Physical documents could be amended informally through cross-outs and margin notes; digital systems often required navigating formal revision protocols or administrative permissions that slowed corrections. Manual filing allowed idiosyncratic organizational schemes tailored to individual work habits; standardized digital systems imposed uniform structures that felt constraining. These preferences for manual flexibility should not be dismissed as mere Luddism; they reflect legitimate adaptations to organizational realities where informal practices often expedite work that formal procedures would complicate.

These findings align substantially with barriers identified in broader literature while also revealing contextual specificities. Kumar and Sharma (2024) documented that rural Indian schools faced remarkably similar infrastructure constraints intermittent internet, inadequate hardware, absent technical support that prevented effective digital adoption despite policy mandates, aligning with our findings. Nguyen et al. (2023) found that Vietnamese schools struggled with heterogeneous staff competencies, where digitally proficient younger teachers contrasted sharply with older colleagues lacking basic computer skills, creating intergenerational tensions around technology use—extending our understanding by adding generational dimensions. Lee and Kim (2023) observed that budget constraints in Korean rural schools meant that digital initiatives proceeded sporadically based on funding availability rather than strategic planning, similar to the reactive pattern observed at State Junior High School 03 of Central Bengkulu. Ahmed & Hassan (2024) documented psychological resistance in Pakistani schools, where senior teachers perceived digital systems as implicit criticism of established practices and threats to accumulated expertise reinforcing our competence anxiety findings. However, some scholarship suggests different patterns that challenge universalizing these barriers. Park et al. (2024) found that Korean schools successfully overcame competency heterogeneity through peer mentoring systems where digitally proficient staff formally coached colleagues, a practice absent at State Junior High School 03 where help-seeking occurred informally and sporadically challenging our findings by suggesting organizational solutions exist. Chen and Zhang (2023) reported that Chinese schools addressed infrastructure limitations through provincial government infrastructure

investments that provided reliable connectivity and regular equipment updates resources unavailable in Indonesia's decentralized education system were schools largely self-finance technology. These contrasting findings indicate that while certain barriers recur across contexts, their relative significance and potential remediation strategies vary based on governance structures, resource allocation mechanisms, and organizational cultures.

Resistance Dynamics and Change Management Failures (RQ4)

Resistance to digital transformation operated through multiple mechanisms beyond the psychological dimensions discussed above, directly addressing Research Question 4 regarding how institutional and individual-level dynamics, including change management approaches, sustain or mitigate resistance. Institutional resistance manifested in the absence of formal change management strategies. The school lacked a coherent digitalization roadmap specifying which administrative domains would digitalize in what sequence, what resources would be allocated, what training would be provided, and what timelines would guide implementation. Instead, digitalization occurred reactively in response to external mandates (Dapodik, ARKAS) while other domains remained manual through organizational inertia rather than deliberate decision. The principal acknowledged: 'We don't really have a digital transformation plan. We implement whatever the ministry requires and handle the rest the way we always have. Maybe we should plan it better, but we're already overwhelmed.' This reactive posture meant that digitalization proceeded without stakeholder consultation about needs and concerns, without piloting to identify implementation challenges, and without mechanisms for feeding back learning from early implementations into subsequent efforts.

Structural resistance emerged from organizational fragmentation where different administrative domains operated semi-independently without coordination mechanisms. Student affairs staff used Dapodik; financial staff used ARKAS; personnel and general administration used manual systems but no integrated platform bridged these domains, and no formal protocols governed information sharing across them. When student demographic changes affected financial calculations or personnel assignments, staff manually transferred information between systems through informal communication rather than automated data flows. This fragmentation reduced incentives for comprehensive digitalization because each domain could optimize locally without considering system-wide integration, and the absence of integration made comprehensive digitalization appear more complex and costly than incremental manual workarounds.

Cultural resistance reflected broader tensions between centralized modernization mandates and local operational realities. National policies requiring digital systems presumed conditions reliable infrastructure, technical capacity, adequate budgets—that many regional schools lacked. Rather than adapting mandates to local conditions or providing enabling resources, policies imposed uniform requirements expecting schools to bridge implementation gaps independently. This created resentment among staff who felt judged against unrealistic standards. The administrative head expressed frustration: 'They tell us we must digitalize everything, but they don't give us the internet that works or the training we need. Then they criticize us for not complying fully. It's not fair.' This perceived unfairness generated passive resistance where staff performed minimal compliance with mandated systems while preserving manual processes as primary workflows.

These resistance patterns resonate with change management literature emphasizing that successful organizational transformation requires more than technological deployment. Kotter's (2012) change model posits that sustainable change demands creating urgency, building guiding coalitions, developing vision and strategy, communicating widely, empowering action, generating short-term wins, consolidating gains, and anchoring changes in culture processes largely absent in State Junior High School 03's digitalization experience. The school implemented mandated systems without establishing urgency beyond regulatory compliance, without forming change leadership coalitions, without articulating vision beyond 'do what the ministry requires,' and without celebrating successful implementations to build momentum. Consequently, digitalization occurred mechanically rather than organically, meeting minimal compliance standards without transforming organizational culture or operations. Martinez and Rodriguez (2024) documented remarkably similar change management deficits in Spanish rural schools, where digital mandates arrived without supporting change infrastructure, generating compliance resistance and prolonged hybrid states aligning with our findings. Anderson et al. (2023) found that UK schools with successful digital transformations invested substantially in change management stakeholder engagement, phased implementation, continuous training, visible leadership commitment that distinguished them from schools where digitalization stalled, extending our understanding by identifying success factors. These findings suggest that technological and resource barriers may prove less determinative than change management approaches in shaping digital transformation outcomes a theoretical insight with significant practical implications.

Implications for Digital Transformation Theory

These findings challenge several assumptions embedded in digital transformation literature. First, they problematize linear stage models suggesting organizations progress sequentially from manual through hybrid toward fully digital administration. Evidence

here establishes that hybrid states can persist indefinitely rather than transitioning automatically toward comprehensive digitalization. When external mandates enforce digitalization in some domains but not others, when resources cannot support system-wide implementation, and when change management infrastructure remains absent, hybridity constitutes a semi-stable organizational equilibrium rather than transitional stage. This implies that theoretical frameworks should conceptualize hybrid administration as a potentially enduring organizational form warranting its own analytical attention, not merely a waypoint toward digitalization. This represents a fundamental theoretical advancement: we must develop frameworks for understanding hybridity as phenomenon, not merely apply digital transformation theories retrospectively.

Second, findings complicate efficiency narratives by revealing that partial digitalization sometimes amplifies rather than reduces administrative burden through duplication requirements, interoperability failures, and technological unreliability. This suggests that the relationship between digitalization and efficiency operates nonlinearly and contextually: minimal digitalization may generate net efficiency costs as staff maintain parallel systems; moderate digitalization may reduce efficiency in unreliable infrastructure contexts; comprehensive digitalization with robust integration may finally realize efficiency gains but only under resource conditions many schools cannot achieve. Theoretical models should therefore specify boundary conditions under which digitalization improves efficiency rather than assuming uniform positive effects. This extends existing theories by requiring explicit attention to context-dependent contingencies.

Third, the prominence of change management deficits suggests that technology implementation scholarship overemphasizes technical factors (infrastructure, software design, training) relative to organizational development dimensions (stakeholder engagement, cultural adaptation, leadership commitment). Successful digital transformation may depend less on technological sophistication than on change management competence a realization with significant implications for how interventions should be designed and resources allocated. This challenges technology-centric frameworks by cantering organizational processes as primary determinants of implementation success.

D. Conclusions

Based on the research findings, it can be concluded that administrative transformation at State Junior High School 03 of Central Bengkulu advances digital transformation scholarship by establishing hybrid administrative systems as semi-permanent organizational equilibria rather than temporary transitional phases. The key finding

reveals that in resource-constrained educational contexts, hybridity emerges not from implementation failure but from rational adaptation to structural realities: external mandates enforce selective digitalization, infrastructure unreliability makes comprehensive adoption impractical, budget constraints prevent integrated solutions, and psychological resistance reflects legitimate concerns about competence disruption and autonomy loss. These interconnected dynamics produce stable hybrid configurations that persist indefinitely, requiring theoretical reconceptualization distinct from frameworks developed for well-resourced contexts progressing linearly toward full digitalization. The research challenges linear stage models by demonstrating that hybrid systems function as organizational equilibria when structural constraints prevent comprehensive digital integration, problematizes efficiency assumptions by revealing that partial digitalization generates paradoxical outcomes where improvements coexist with duplication burdens, and identifies change management capacity as potentially more determinative of implementation success than resource availability. The practical implication of this study is that successful digital transformation in regional schools requires sequential implementation roadmaps prioritizing high-impact domains where digitalization delivers clear value, sustained competency development addressing heterogeneous skill levels through differentiated training and peer mentoring, adequate infrastructure investment ensuring system reliability, and institutional change management engaging stakeholders in visioning digital futures. Perhaps most fundamentally, policymakers should shift from mandating universal digital adoption toward supporting schools in strategically navigating hybrid operations, acknowledging that under resource constraints, judicious hybridity may prove more effective than premature attempts at comprehensive digitalization that generate compliance theatre without operational transformation. Future research should pursue comparative case studies examining schools that have successfully transitioned beyond hybridity alongside those remaining in prolonged hybrid states to identify critical success factors and divergent pathways. Design-based research collaborating with schools to co-create and iteratively test "managed hybridity" frameworks could generate actionable implementation models. Additionally, longitudinal studies tracking schools over multiple years could document whether hybrid states represent permanent equilibria or very slow transitions, identifying tipping points where accumulated capacity enables progression and conditions under which regression occurs. Such inquiry would move scholarship toward nuanced understanding of how technology, organization, and context interact in shaping administrative transformation.

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