



Committed but Constrained: School Administrative Support for ICT Integration in Public Secondary Schools in Mkuranga District, Tanzania

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Abstract : Digital education has become a priority, yet school-level implementation remains uneven because devices, maintenance, technical support, and teacher development are not consistently available. This study examined how school administrative support facilitates or constrains ICT integration in secondary-school teaching and learning in Mkuranga District. Its objective was to explain the leadership, professional-support, and institutional conditions shaping implementation. A qualitative approach and multiple-case-study design were used in three ICT-equipped public secondary schools. The sample comprised 33 participants: three heads of schools, three ICT teachers, three subject teachers, and 24 Form Three and Form Four students. Data were generated through semi-structured interviews, six focus-group discussions, and three 40-minute classroom observations. After institutional and administrative clearance, participants were recruited purposively, with subject teachers identified through snowball sampling; interviews and discussions were audio-recorded, transcribed verbatim, and supported by field notes. Data were coded manually and analysed inductively using Braun and Clarke's six-phase thematic procedure, while the Technology Acceptance Model informed interpretation. Credibility, dependability, confirmability, and transferability were strengthened through triangulation, member checking, thick description, reflexive journaling, and an audit trail. Participation was voluntary, informed consent was obtained, identities were protected, and data were stored. Findings show that leaders encouraged ICT use, mobilised resources, enabled peer learning, and organised technical assistance, but shortages of equipment, maintenance finance, and specialist personnel restricted consistent classroom use. The study concludes that leadership cannot substitute for institutional capacity. It recommends ring-fenced maintenance funding, digital plans, job-embedded professional learning, reliable technical support, and utilisation-focused monitoring aligned with Tanzania's digital education strategy.

Keyword : administrative support, digital leadership, ICT integration, public secondary schools, Tanzania, Technology Acceptance Model

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INTRODUCTION

Digital technology now occupies a central place in debates about educational quality, inclusion, and system resilience, but the contemporary argument has shifted from whether schools possess technology to whether they can use it appropriately, equitably, and sustainably. The 2023 Global Education Monitoring Report identifies access, governance, and teacher preparation as system-wide conditions for technology to fulfil its educational potential, while warning that technology may reproduce inequality when introduced without attention to context (UNESCO, 2023). Similarly, the OECD (2023) treats digital education as an ecosystem in which infrastructure, content, professional capacity, governance, and evaluation must work together. Recent evidence supports this institutional view. A systematic review of ICT integration in secondary education found that meaningful adoption depends on coordinated action by leaders, teachers, governments, and communities, rather than on equipment provision alone (Msambwa et al., 2024). School leadership therefore matters because leaders translate broad policy into priorities, budgets, routines, professional learning, and conditions for classroom experimentation. Studies show that technology-oriented leadership can strengthen a learning-organisation culture (Banoğlu et al., 2023), while transformational leadership can encourage teachers to

use technology for more pedagogically demanding purposes instead of merely substituting digital tools for conventional practices (Schmitz et al., 2023).

Across sub-Saharan Africa, this ecosystem is shaped by persistent spatial and institutional inequality. Rural schools frequently operate with limited connectivity, inadequate devices, weak maintenance systems, and scarce technical expertise; a recent systematic review also found that the regional evidence base is geographically uneven and disproportionately concentrated in South Africa (Odunga, 2024). These conditions mean that a willing teacher or principal may still be unable to convert perceived value into regular use. Tanzania has responded by moving toward a more comprehensive policy architecture. The *National Digital Education Strategy, 2024/25–2029/30* links infrastructure and access with curriculum integration, digital content, assessment, human-resource development, technical support and maintenance, partnerships, resource mobilisation, governance, monitoring, and sustainability (Ministry of Education, Science and Technology [MoEST], 2025). This policy direction is consistent with Tanzanian evidence that teacher competence is strengthened by in-service training and access to digital resources (Hamad et al., 2024; Kalinga & Ndibalema, 2023), and that professional learning communities can support practice-

based ICT integration even when resources are insufficient (Ngao & Sang, 2024). The policy challenge is thus no longer simply to distribute hardware, but to build school-level capacity that keeps equipment functional, accessible, and instructionally useful.

Mkuranga District offers a critical setting in which to examine that implementation problem. Its largely rural and peri-urban public secondary schools reflect many of the resource pressures facing Tanzanian education, yet some already possess computers, projectors, Smartboards, internet connections, and related facilities. The unresolved question is what administrators do with these resources and why supportive intentions sometimes fail to produce regular classroom integration. Previous Tanzanian studies have often examined infrastructure, teacher competence, or attitudes separately; fewer have combined the voices of heads of schools, ICT teachers, subject teachers, and students with direct classroom observation in ICT-equipped schools. This creates a context-specific gap concerning how leadership commitment interacts with professional support, equipment availability, maintenance, staffing, and finance. Accordingly, this article draws from a qualitative multiple-case study to examine how school administrative support facilitates or constrains ICT integration in teaching and learning in three public secondary schools in

Mkuranga District. It contributes a “committed but constrained” account: administrative support can increase the perceived usefulness and ease of ICT use, but its effect remains conditional on the facilitating environment within which school leaders and teachers act.

Literature Review

1. Theoretical Review

The study was principally guided by the Technology Acceptance Model (TAM), which proposes that perceived usefulness and perceived ease of use shape a person’s attitude and intention to use technology (Davis, 1989). In a school, teachers are more likely to accept ICT when they believe that it improves lesson preparation, presentation, assessment, learner engagement, or administrative efficiency and when they expect its use to require manageable effort. Meta-analytic evidence confirms that TAM remains a strong framework for explaining teachers’ adoption of digital technology (Scherer et al., 2019), and its enduring value lies in its parsimonious account of how external conditions are filtered through users’ judgments (Granić & Marangunić, 2019). Administrative support can therefore influence perceived usefulness by communicating instructional purpose, modelling legitimate uses, and linking ICT to school priorities. It can influence perceived ease of use by organising access, training, peer assistance, troubleshooting, and time to practise. Within this logic, leadership is not a

distant contextual variable; it is a mechanism through which teachers' experiences with technology become either enabling or burdensome.

TAM nevertheless risks individualising a problem that is partly organisational. Its classic constructs can explain why teachers intend to use ICT, but they do not fully specify whether a school has enough functioning devices, dependable electricity and connectivity, repair funds, technical personnel, scheduling arrangements, or professional-learning routines. Bagozzi (2007) accordingly criticised the model's narrow treatment of the broader processes connecting intention and action. The Unified Theory of Acceptance and Use of Technology (UTAUT) addresses part of this weakness by adding social influence and facilitating conditions to performance and effort expectancy (Venkatesh et al., 2003). Facilitating conditions are especially relevant in resource-constrained schools because users may regard technology as valuable and feel favourably disposed toward it while still lacking a realistic opportunity to use it. Contemporary digital-education frameworks reach a similar conclusion: governance, teacher preparation, infrastructure, and sustainability are interdependent rather than optional additions to adoption (OECD, 2023; UNESCO, 2023).

This article therefore uses TAM as the primary interpretive lens but reads its two central beliefs within a UTAUT-

informed institutional environment. Leadership encouragement, supervision, and alignment with school goals are expected to enhance perceived usefulness; training, peer coaching, scheduling, equipment functionality, and technical assistance are expected to enhance perceived ease of use. Finance, staffing, maintenance, connectivity, and device-to-user pressure constitute facilitating conditions that determine whether those favourable perceptions become routine behaviour. The resulting proposition is that administrative commitment is necessary but not sufficient: it shapes meaning, motivation, and support, whereas institutional capacity shapes practical opportunity. This extension is theoretically important for Tanzanian public secondary schools because it moves analysis beyond the binary of "acceptance" versus "resistance" and explains non-use that arises even where teachers and leaders value ICT.

2. Empirical Review

International evidence increasingly treats principals as technology leaders rather than merely custodians of equipment. In a study of 69 public K-12 schools, Banoğlu et al. (2023) found that principals' systemic-improvement practices, including data-informed decisions and technology-oriented staffing, predicted stronger organisational-learning profiles. Schmitz et al. (2023) similarly showed that transformational leadership was

associated with teachers' use of technology in more demanding pedagogical ways. This relationship is plausible because leaders establish a vision, legitimise experimentation, allocate resources, and connect individual learning to collective routines. However, the evidence also shows that leadership operates through enabling structures. Teachers' readiness varies with professional knowledge, confidence, organisational support, and access to functioning tools (Howard et al., 2021). Thus, the empirical question is not whether leadership matters in the abstract, but which practices help teachers use ICT and whether the institution can sustain them.

Evidence from Africa reinforces the importance of context. Odunga's (2024) review of ICT interventions in rural sub-Saharan Africa identified infrastructure deficits and unequal access as continuing barriers to implementation and scalability. In South African secondary schools, Naicker and Khumalo (2023) found that principals and teachers acted as technology leaders but faced impediments that complicated technological change. These findings caution against transferring leadership models from well-resourced systems without adaptation. In many African public schools, leaders must simultaneously mobilise external partners, ration scarce devices, create repair arrangements, and rely on teachers with informal technical roles.

Administrative support is consequently both pedagogical and infrastructural. Its success depends on coordination across school, district, government, community, and development-partner levels, a point echoed by the contemporary emphasis on equity and sustainability in global education policy (UNESCO, 2023).

Tanzanian studies provide evidence of both emerging capability and continuing constraint. Kalinga and Ndibalema (2023) reported that technological competencies are important for effective secondary-school teaching, while Hamad et al. (2024) found that many teachers in Zanzibar demonstrated relatively high competence in using digital lesson content, with in-service training and attitudes influencing performance. At the organisational level, Ngao and Sang (2024) found that Tanzanian secondary teachers used community collaboration, practice-based learning, and digital tools within professional learning communities, but their work remained constrained at macro, meso, and micro levels. These studies support a shift from one-off training toward job-embedded learning and collegial assistance. Yet they do not fully explain how heads of schools and ICT teachers combine leadership, resource mobilisation, supervision, professional support, and maintenance in rural or peri-urban schools where ICT facilities already exist. The Mkuranga cases address this gap by connecting administrative practice to the observed

conditions of classroom use and by comparing evidence across leaders, teachers, students, and lessons.

METHODOLOGY

The study adopted a qualitative research approach because it sought to understand how educational actors interpreted and experienced administrative support for ICT integration. A multiple-case-study design bounded the inquiry within three public secondary schools in Mkuranga District, Pwani Region. Each school had some pre-existing ICT infrastructure and experience of technology-mediated instruction, allowing the study to investigate utilisation rather than simple absence. The design supported comparison across schools while retaining the institutional and infrastructural context of each case (Creswell & Poth, 2018; Ridder, 2017).

The sample comprised 33 participants: three heads of schools, three ICT teachers, three subject teachers, and 24 students. Eight students were selected from each school, with four from Form Three and four from Form Four; across the sample, students were evenly distributed by form and gender. Schools, heads, ICT teachers, and students were selected purposively as information-rich cases. Subject teachers were identified through snowball sampling: the ICT teacher at each school recommended a subject teacher who used ICT in instruction and could

therefore be observed. All targeted participants took part, producing a 100% response rate, although the purposive qualitative sample was intended for analytic depth rather than statistical generalisation.

Data were generated through three instruments. Semi-structured interviews were conducted with the three heads of schools and three ICT teachers to explore infrastructure, leadership practices, training, technical support, resource mobilisation, and constraints. Six focus-group discussions were held with students, two at each school and four learners per group, separated by form level. Three classroom observations, each lasting approximately 40 minutes, documented the digital tools used, their functionality, teaching practices, learner engagement, and visible constraints. Following research clearance from St. Augustine University of Tanzania and permissions from regional, district, and school authorities, participants were briefed and recruited. With consent, interviews and discussions were audio-recorded and later transcribed verbatim; observations were recorded through a structured checklist and descriptive field notes.

The data were analysed manually using reflexive thematic analysis informed by Braun and Clarke's (2019) six-phase process. The researcher repeatedly read transcripts and observation records, produced initial codes, grouped related codes,

developed candidate themes, reviewed themes against the dataset, and defined and reported the final thematic structure. Coding was mainly inductive, while TAM was used during interpretation rather than as a predetermined coding frame. Evidence was compared across participant categories and data sources to identify convergence and divergence. For the objective reported in this article, the analysis produced three connected themes: leadership commitment, professional and technical assistance, and institutional barriers to administrative support.

In qualitative terms, validity and reliability were addressed through trustworthiness. Credibility was strengthened by methodological triangulation across interviews, focus groups, and observations; source triangulation across administrators, teachers, and students; member checking of interview summaries; and supervisory review of the instruments. Dependability and confirmability were supported through consistent guides, audio recording, verbatim transcription, field notes, a reflexive journal, and an audit trail of collection and analytic decisions. Thick description of the district, schools, participants, and procedures supported transferability (Lincoln & Guba, 1985; Ravitch & Carl, 2021; Tracy, 2020). Ethical practice included voluntary participation, informed consent, the right to decline questions or withdraw, pseudonyms and

alphanumeric codes, removal of identifiers, secure storage accessible only to the researcher and supervisors, respectful data collection, and efforts to minimise disruption or harm. The study followed institutional clearance procedures and the ethical principles of respect, beneficence, and justice (Babbie, 2020; British Educational Research Association, 2018).

FINDINGS AND DISCUSSION

The major finding was that school leaders were not passive or resistant to ICT integration. Across the three cases, heads of schools promoted ICT, sought resources, supported training, and organised assistance. However, these actions did not reliably produce routine classroom integration because administrative agency was bounded by limited devices, maintenance finance, technical personnel, and competing enrolment pressures. The evidence therefore reveals a distinction between leadership commitment and implementation capacity. Administrative support improved the perceived usefulness and ease of ICT use, but insufficient facilitating conditions interrupted the path from positive intention to consistent practice.

Leadership Commitment Made ICT an Institutional Priority

Heads of schools described ICT as part of school improvement rather than a peripheral activity. They encouraged teachers to use ICT in lesson preparation and instruction,

included digital needs in development planning, monitored available facilities, and sought equipment from government offices, sponsors, and other stakeholders. One head reported continuing collaboration with Camara Education and routine reporting on computer use, while another explained that the school repeatedly requested equipment through the director's office. A third connected stakeholder mobilisation to six additional computers expected by the school. ICT teachers corroborated this account, noting that heads encouraged integration and supported equipment purchases when funds were available. Students also recognised that administrators and teachers organised access to computers and helped them acquire skills they previously lacked.

Observation evidence strengthened these self-reports: ICT facilities were present and were used in selected lessons and practical activities, although the extent of use differed by school and lesson. This convergence is important because it shows that leadership commitment had observable organisational expression. It was visible in planning, external engagement, access arrangements, and actual use, not only in favourable interview statements. The finding supports Banoğlu et al. (2023), who connect technology leadership with school-wide learning capacity, and Schmitz et al. (2023), who show that transformational leadership can move teachers toward more purposeful uses

of technology. In Mkuranga, however, leadership was also entrepreneurial. Heads had to bridge gaps in public provision by cultivating donors, local stakeholders, and district channels. This adaptive practice is especially salient in resource-constrained settings, where a principal's role includes building the material conditions that better-resourced systems may take for granted.

Through a TAM lens, leadership emphasis can raise perceived usefulness by framing ICT as relevant to lesson quality, access to knowledge, and school development (Davis, 1989). Yet the data suggest that usefulness is socially and institutionally produced: teachers encounter technology not as isolated individuals but through the expectations, permissions, schedules, and resource decisions of the school. This helps explain why the same broad national policy may generate different practices across schools. Tanzania's current digital strategy assigns importance to institutional coordination, resource mobilisation, monitoring, and maintenance, so the Mkuranga evidence provides a grounded account of what those policy pillars require at school level (MoEST, 2025). It also suggests that monitoring should examine frequency, range, and instructional purpose of use rather than merely count equipment.

Professional and Technical Assistance Reduced the Burden of Use

The second finding was that administrative support worked

through a local learning-and-assistance network. Heads enabled formal training, encouraged trained teachers to share knowledge, and relied on ICT teachers for coaching and troubleshooting. One head described recent school-based training on using tools such as ChatGPT for preparing notes; another reported that approximately seven ICT-trained teachers supported colleagues who lacked confidence. In a third school, two teachers who attended national training returned and “trained the rest of us here,” sustaining peer learning (HoS-Z, 2026). ICT teachers described helping colleagues operate computers, projectors, and Smartboards, use educational software, prepare lessons, and solve minor technical problems. Classroom observations confirmed that ICT teachers were available to support technology use when required.

This pattern shows why professional development is more effective when it continues after a workshop. Formal training created initial knowledge, but peer coaching converted that knowledge into situated practice and immediate problem solving. The finding closely aligns with Ngao and Sang’s (2024) Tanzanian study, in which professional learning communities fostered ICT integration through practice-based approaches and collaboration despite insufficient resources. It also accords with Hamad et al. (2024) and Kalinga and Ndibalema (2023), who emphasise the relationship between in-service

learning, competence, and technology-supported teaching. The contemporary implication is that school systems should avoid defining capacity building as attendance at a single course. Teachers need repeated opportunities to plan with digital tools, try them in specific subjects, receive feedback, and obtain timely help when equipment or software fails.

Theoretically, these supports primarily affected perceived ease of use. Training and accessible assistance reduced uncertainty, effort, and the risk that a technical problem would derail a lesson. They could also reinforce perceived usefulness by helping teachers apply ICT to authentic instructional tasks. The finding therefore supports TAM while extending it: ease of use was not merely a stable property of the tool or an individual perception; it was collectively produced through collegial expertise, leadership permission, and practical support. This is consistent with UTAUT’s facilitating conditions, because the same teacher may find a tool manageable in a supported school and unusable in an unsupported one (Venkatesh et al., 2003). The finding also raises a sustainability issue. When technical support depends on a small number of ICT teachers who already carry teaching and administrative responsibilities, collegial assistance can become a hidden workload rather than a durable institutional system.

Institutional Constraints Limited What Committed Leaders Could Deliver

The third and most consequential finding was that institutional capacity set a ceiling on administrative support. Heads and ICT teachers consistently identified insufficient equipment, inadequate maintenance funds, delayed repairs, rising enrolment, and shortage of specialist technical staff. One head summarised the central tension as “five computers and forty students” (HoS-Z, 2026), while another noted that the school had no projector, few Smartboards, and too few computers. Students reported waiting for access because a single Smartboard or a limited set of computers had to be shared across classes. ICT teachers explained that they were simultaneously expected to teach, maintain equipment, troubleshoot for colleagues, and assist the administration; one stated that “the load is sometimes too much” (ICTT-X, 2026). When several computers failed, repairs were delayed because schools depended on external technicians and lacked dedicated budgets.

Classroom observations corroborated the pressure created by shared facilities and the expanded responsibilities of ICT teachers. This agreement across administrators, teachers, students, and observations makes the finding stronger than an inventory of missing equipment. The problem was not absolute absence: all

three schools had basic ICT resources. The problem was adequacy, functionality, accessibility, and institutional capacity to keep the resources in use. This distinction echoes UNESCO’s (2023) warning that access alone is an insufficient measure of educational technology and Msambwa et al.’s (2024) conclusion that stakeholder coordination and supportive conditions are central to effective secondary-school integration. It also resonates with Odunga’s (2024) evidence on rural sub-Saharan Africa, where infrastructure constraints continue to limit scale and equity.

The Mkuranga cases nevertheless add a more precise explanation. Limited equipment created competition and waiting; maintenance gaps reduced reliability; absence of technicians shifted support work onto ICT teachers; and financial scarcity delayed repairs and replacement. Each constraint increased the effort and uncertainty associated with using technology. In TAM terms, they depressed perceived ease of use even where perceived usefulness remained high. In UTAUT terms, they weakened facilitating conditions and prevented favourable intentions from becoming regular practice. This is why the study’s central conclusion is “committed but constrained.” Leadership cannot be judged only by enthusiasm or policy compliance when administrators lack the budgets, staff, and infrastructure necessary to enact their plans. Conversely, equipment

programmes are unlikely to be sustainable if they do not fund the leadership routines, professional learning, technical support, and maintenance that turn devices into educational services.

Taken together, the findings revise a simple deficit narrative. Teachers and leaders were not uniformly unwilling, unskilled, or unaware; they actively created local solutions. Nor were ICT-equipped schools necessarily digitally ready. The critical mechanism was alignment: leadership commitment had the greatest practical value when equipment was functional, support was nearby, professional learning was continuous, and access was organised. This interpretation directly supports the integrated architecture of Tanzania's *National Digital Education Strategy, 2024/25–2029/30*, particularly its linked pillars on infrastructure, human capacity, technical support and maintenance, partnership, governance, monitoring, and sustainability (MoEST, 2025). It also suggests a theoretical refinement: in resource-constrained schools, perceived usefulness and perceived ease of use should be analysed as institutionally conditioned experiences rather than solely individual beliefs.

CONCLUSION AND RECOMMENDATIONS

This study examined how school administrative support facilitated or constrained ICT integration in three

public secondary schools in Mkuranga District. It concludes that administrative support was substantive but conditional. Heads of schools established ICT as a development priority, encouraged use, mobilised resources, enabled training, supervised facilities, and relied on ICT teachers and peer learning to solve practical problems. These actions made technology more legitimate, useful, and manageable for teachers. Their effect, however, was repeatedly curtailed by too few devices, competition among users, maintenance costs, delayed repairs, shortage of technical personnel, and overloaded ICT teachers. The findings therefore challenge both a hardware-centred explanation and an attitude-centred explanation of integration. Sustainable use emerges from the interaction of committed leadership, teacher learning, functioning infrastructure, technical assistance, and financial capacity.

The practical response should mirror that interaction. Education authorities should provide ring-fenced, predictable funding for preventive maintenance, repair, connectivity, and staged equipment replacement, rather than treating hardware acquisition as the end of an intervention. Device allocation should reflect enrolment and instructional demand, and schools should have access to district-level technicians or service arrangements with clear response times. Each school should translate the national strategy

into a costed digital implementation plan that specifies instructional purposes, access schedules, staff responsibilities, maintenance procedures, safeguarding expectations, and indicators of actual utilisation. Monitoring should examine how often technology is used, by whom, for which subjects and pedagogical purposes, and with what interruptions.

Professional development should be continuous, subject-relevant, and job embedded. Formal courses should be linked to school-based coaching, peer observation, lesson design, and protected time for practice. ICT teachers should be recognised for their support role, given a manageable workload, and connected to wider technical and professional networks so that a school's digital capacity does not depend on one overextended individual. Heads of schools also need development in technology leadership, budgeting, data-informed monitoring, responsible use of emerging tools, and partnership management. At policy level, implementation of the national digital education strategy should deliberately connect infrastructure, human capacity, technical support, governance, and sustainability. Further research should follow schools longitudinally, include institutions with lower ICT exposure, compare subject-specific practices, and evaluate which combinations of leadership support and resourcing produce sustained classroom use and improved learning.

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