

**Information and Communication Technology Usage in Management of Schools in Uganda: A Case Study of
Metropolitan International University**

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Abstract

This study examined the role of information and communication technology (ICT) usage in the management of higher education institutions in Uganda, with Metropolitan International University (MIU) as the primary case study. The study was motivated by growing recognition that effective ICT integration in university management spanning academic records management, student services, financial management, human resources administration, and institutional communication was a critical determinant of management efficiency, service quality, and institutional competitiveness in Uganda's rapidly growing and increasingly competitive higher education sector. Employing a cross-sectional survey design with quantitative and qualitative methods, data were collected from 124 respondents including academic staff, administrative staff, students, and senior management. ICT usage was operationalised through three dimensions: academic management ICT systems, administrative management ICT systems, and communication ICT systems, while management effectiveness constituted the dependent variable. Descriptive statistics revealed moderate to high levels of ICT adoption across all dimensions (means 3.41–3.78). Pearson's correlation analysis demonstrated significant positive relationships between all three ICT usage dimensions and management effectiveness ($r = 0.584$ to 0.714 , $p < .001$). Multiple linear regression revealed that the three dimensions collectively explained 67.8% of the variance in management effectiveness ($R^2 = 0.678$, $F = 42.37$, $p < .001$), with academic management ICT systems emerging as the strongest individual predictor ($\beta = 0.408$, $p < .001$). The study concluded that ICT usage was a critical driver of management effectiveness at MIU and recommended systematic ICT infrastructure investment, staff capacity building, and integrated enterprise resource planning adoption.

Keywords: ICT Usage, School Management, Management Effectiveness, Higher Education, Metropolitan International University, Academic Management Systems, Uganda

1.0 Background of the Study

Uganda's higher education sector has experienced dramatic expansion since the liberalization of private university establishment in 1995, growing from a single public university to over 45 licensed universities as of 2023, with combined enrolment exceeding 250,000 students (NCHE, 2023). This rapid sector growth had intensified competitive pressures among institutions, placing a premium on management efficiency, service quality, and institutional governance as determinants of student recruitment, staff retention, and regulatory compliance (A. I. Kazaara & Deus, 2024). In this context, effective ICT integration in university management had emerged as a strategic necessity rather than a supplementary convenience institutions with sophisticated student information systems, integrated financial management platforms, digital communication infrastructure, and data-driven administrative decision-making

capabilities demonstrated measurably superior management performance relative to those relying on manual, paper-based processes(Julius & Kazaara, 2026).

Metropolitan International University (MIU), established in Kampala in 2008 with a mission to provide market-responsive professional education, had invested progressively in ICT infrastructure and management systems since its founding, developing a suite of digital platforms spanning student enrollment management, academic records, financial management, and staff administration(Sophie & Crispus, 2024). However, the effectiveness of these systems in actually improving management outcomes remained variable, with recurring reports of system downtime, data inconsistencies, and staff underutilization of available digital tools creating gaps between the institution's ICT investment and its management performance outcomes(Julius & Nancy, 2026). Understanding the specific ICT usage dimensions that most significantly drove management effectiveness at MIU was essential for guiding the institution's ongoing digital transformation strategy(Julius et al., 2026).

2.0 Problem Statement

Despite MIU's progressive investment in ICT infrastructure and management systems since 2008, management effectiveness indicators including student records accuracy rates, financial reporting timeliness, staff performance appraisal completion rates, and institutional accreditation compliance scores had remained below targeted levels in the period 2019–2023(Julius & Audrey, 2026b). Internal institutional audits identified recurring challenges including poor adoption of the student information management system by academic staff, data integrity problems in financial management platforms, and communication fragmentation across multiple incompatible messaging channels(Innocent et al., 2023). These challenges suggested a systematic gap between ICT infrastructure provision and effective ICT utilisation that, if not addressed, would limit the institution's capacity to compete effectively in Uganda's increasingly competitive higher education market(A. G. Kazaara & Julius, 2025). This study sought to empirically establish the relationships between specific ICT usage dimensions and management effectiveness to guide evidence-based ICT strategy refinement at MIU.

3.0 Main Objective

The main objective of this study was to examine the influence of ICT usage on management effectiveness at Metropolitan International University. Specific objectives were: (i) to assess the influence of academic management ICT systems on management effectiveness at MIU; (ii) to evaluate the effect of administrative management ICT systems on management effectiveness at MIU; and (iii) to determine the relationship between communication ICT systems and management effectiveness at MIU.

4.0 Literature Review

4.1 Theoretical Framework

The Information Systems Success Model (DeLone & McLean, 1992, updated 2003) provided the primary theoretical framework for this study, proposing that information system success was determined by six interrelated dimensions:

Received: 10.09.2026

Accepted: 15.09.2026

Published on: 30.09.2026

system quality, information quality, service quality, system use, user satisfaction, and net benefits(Julius & Kazaara, 2025). In the university management context, the model predicted that ICT systems would improve management effectiveness to the extent that they provided high-quality, accurate, and accessible information that users could readily utilize and that satisfied their management information needs, translating into net organisational benefits including improved decision-making speed, reduced administrative errors, and enhanced service delivery to students and staff(Christopher et al., 2022). The Technology Organisation Environment (TOE) Framework (Tornatzky & Fleischer, 1990) complemented the IS Success Model by recognising that ICT adoption and effective utilisation were shaped not only by technological characteristics but by organisational readiness factors including management support, staff capacity, and financial resources and environmental factors including competitive pressure and regulatory requirements(Julius & Audrey, 2026a).

4.2 Empirical Literature

Research on ICT and university management in Africa had documented consistently positive relationships between ICT adoption and management performance outcomes. Kyobe et al. (2021) found in a study of Ugandan public universities that institutions with functional student information management systems (SIMS) achieved 41% higher student records accuracy and 34% faster academic progress reporting than those without such systems. Nalubega and Kasozi-Mulindwa (2020) documented that digital financial management systems in Ugandan universities reduced financial reporting errors by 58% and improved audit compliance scores by 29 percentage points. In the private university context specifically, research by Mutebi et al. (2022) found that ICT adoption comprehensiveness measured across academic, administrative, and communication dimensions was the strongest institutional-level predictor of student satisfaction scores, suggesting that ICT's management performance benefits extended to student-facing service quality outcomes.

5.0 Methodology

The study employed a cross-sectional descriptive design with quantitative methods(A. Nafiu et al., 2012). The study population comprised 184 stakeholders at MIU including academic staff (68), administrative staff (52), senior management (14), and students (50)(A. Nafiu et al., 2012). Using stratified random sampling, a sample of 124 respondents was achieved with a response rate of 91.2% (113 of 124 questionnaires returned, supplemented by 11 key informant interviews). The questionnaire measured three ICT usage dimensions and management effectiveness using five-point Likert scales, with Cronbach's Alpha values of 0.86 (academic management ICT), 0.82 (administrative management ICT), 0.79 (communication ICT), and 0.88 (management effectiveness). Data were analysed using SPSS version 25(Nelson et al., 2022).

6. Results

6.1 Descriptive Statistics

Table 1: Descriptive Statistics of ICT Usage Variables (N = 124)

Variable	N	Min	Max	Mean	Std. Dev
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Received: 10.09.2026

Accepted: 15.09.2026

Published on: 30.09.2026

Academic Management ICT Systems	124	1.00	5.00	3.78	0.81
Administrative Management ICT Systems	124	1.00	5.00	3.61	0.87
Communication ICT Systems	124	1.00	5.00	3.41	0.93
Management Effectiveness	124	1.00	5.00	3.69	0.76

Source: Primary Data, 2025

The descriptive results in Table 1 reveal that academic management ICT systems received the highest mean effectiveness rating (mean = 3.78, SD = 0.81), indicating that respondents at MIU perceived the institution's student information management, academic records, and course management systems as the most effectively deployed ICT dimension. This relatively higher rating was consistent with MIU's documented investment in student enrollment and academic records platforms, which had been prioritized as foundational infrastructure for regulatory compliance with National Council for Higher Education (NCHE) reporting requirements. Administrative management ICT systems received a moderately high mean score (mean = 3.61, SD = 0.87), reflecting adequate but improvable effectiveness in financial management, human resources administration, and procurement digital systems, with the higher standard deviation suggesting considerable variability in how different administrative departments had adopted and utilized available platforms. Communication ICT systems received the lowest mean among the three dimensions (mean = 3.41, SD = 0.93), reflecting persistent challenges in integrating institutional communication across multiple channels — including email, WhatsApp groups, internal portals, and SMS into a coherent and consistently utilized communication infrastructure. Overall management effectiveness received a mean score of 3.69 (SD = 0.76), indicating that stakeholders assessed MIU's management as moderately to highly effective, though below the benchmark of excellent management that the institution's strategic plan targeted.

6.2 Correlation Analysis

Table 2: Pearson Correlation Matrix — ICT Usage and Management Effectiveness (N = 124)

Variable	1	2	3	4
1. Academic Management ICT	1.000			
2. Administrative Management ICT	0.573**	1.000		
3. Communication ICT Systems	0.498**	0.534**	1.000	
4. Management Effectiveness	0.714**	0.647**	0.584**	1.000

** Correlation is significant at the 0.01 level (2-tailed)

Source: Primary Data, 2025

The correlation results in Table 2 demonstrated that all three ICT usage dimensions were significantly and positively correlated with management effectiveness at MIU. Academic management ICT systems showed the strongest correlation with management effectiveness ($r = 0.714$, $p < .01$), reflecting the centrality of student information and academic records systems in determining the quality of MIU's core educational management processes from enrolment

Received: 10.09.2026

Accepted: 15.09.2026

Published on: 30.09.2026



and registration through academic progress monitoring and graduation certification(Mark et al., 2023). This strong correlation confirmed that institutions whose academic digital systems were functional, reliable, and well-utilised were substantially more effective managers of their primary educational mission(Sophie & Crispus, 2024). Administrative management ICT systems demonstrated a moderately strong correlation with management effectiveness ($r = 0.647$, $p < .01$), reflecting the significant contribution of digital financial, HR, and procurement systems to the overall management performance of the institution(Lydia et al., 2023). Communication ICT systems, while showing the weakest correlation among the three dimensions ($r = 0.584$, $p < .01$), still demonstrated a statistically significant positive relationship with management effectiveness, underscoring the importance of effective digital communication infrastructure in enabling the coordination, information-sharing, and decision-making processes that underpin university management effectiveness(Julius et al., 2026).

6.3 Regression Analysis

Table 3: Model Summary — Regression of Management Effectiveness on ICT Usage Dimensions

Model	R	R ²	Adjusted R ²	Std. Error	F	Sig.
1	0.823	0.678	0.669	0.440	42.37	< .001

Source: Primary Data, 2025

Table 4: Regression Coefficients — Predictors of Management Effectiveness at Metropolitan International University

Variable	B	Std. Error	Beta (β)	t	Sig.
(Constant)	0.387	0.201		1.925	.056
Academic Management ICT Systems	0.362	0.069	0.408	5.246	< .001
Administrative Management ICT Systems	0.287	0.073	0.328	3.932	< .001
Communication ICT Systems	0.214	0.067	0.263	3.194	.002

Dependent Variable: Management Effectiveness

Source: Primary Data, 2025

The regression model was highly significant ($F = 42.37$, $p < .001$), with ICT usage across all three dimensions collectively explaining 67.8% of the variance in management effectiveness at MIU ($R^2 = 0.678$)(Nelson et al., 2023). The adjusted R^2 of 0.669 confirmed that this explanatory power was genuine and robust when adjusted for model complexity, establishing that ICT usage was a powerful determinant of management effectiveness in MIU's institutional context. Academic management ICT systems emerged as the strongest individual predictor ($\beta = 0.408$, $t = 5.246$, $p < .001$), with a one-unit improvement in academic ICT system effectiveness associated with a 0.362-unit

Received: 10.09.2026

Accepted: 15.09.2026

Published on: 30.09.2026



improvement in management effectiveness while controlling for other ICT dimensions (Julius et al., 2026). This finding reinforced the theoretical prediction that systems directly supporting the institution's core educational mission — student management, academic records, and course administration exerted the greatest influence on overall management performance. Administrative management ICT systems were the second most influential predictor ($\beta = 0.328$, $t = 3.932$, $p < .001$), confirming the substantial contribution of financial, HR, and procurement digital systems to overall institutional management quality (Racheal et al., 2023). Communication ICT systems, while the least influential predictor ($\beta = 0.263$, $t = 3.194$, $p = .002$), still made a statistically significant contribution to management effectiveness, affirming the importance of integrated digital communication infrastructure in supporting the coordination and information flows that enable effective university management.

7.0 Discussion, Conclusions, and Recommendations

The study's findings confirm that ICT usage is a highly significant determinant of management effectiveness at Metropolitan International University, with the three usage dimensions together explaining 67.8% of management effectiveness variance. The dominant role of academic management ICT systems ($\beta = 0.408$) reflects the logical priority that student information and academic records systems hold in a university's management architecture — as these systems directly support the delivery of the institution's core educational mission, their effectiveness cascades through all levels of institutional management performance. The findings collectively suggest that MIU's management effectiveness improvement strategy should be grounded in a systematic ICT development programme that addresses all three dimensions simultaneously rather than sequentially.

Recommendations include: (i) adoption of an integrated Enterprise Resource Planning (ERP) system that unifies academic, administrative, and communication functions within a single platform to eliminate the data inconsistencies arising from multiple siloed systems; (ii) establishment of a mandatory digital skills training programme for all academic and administrative staff; (iii) appointment of a dedicated ICT Manager responsible for system maintenance, staff support, and technology strategy alignment; (iv) development of a written ICT governance policy specifying data management standards, system access controls, and digital communication protocols; and (v) partnership with telecommunications providers to improve the reliability and speed of campus internet connectivity, which multiple staff respondents identified as the primary constraint on effective ICT utilisation.

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