

# Digital Transformation in Education: Investigating the Barriers to Implementing Online Education at Ruaha Catholic University

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**Abstract** - As digital transformation reshapes education globally, higher learning institutions must embrace online education to enhance flexibility and access. However, many universities in developing countries, including Ruaha Catholic University (RUCU), face persistent barriers in implementing effective digital learning systems. This study investigates the technological, institutional, financial, and human-related obstacles that hinder the adoption of online education at RUCU. Using a mixed-methods approach, data were collected from students, lecturers, and administrators through structured questionnaires and interviews. The results reveal key challenges such as inadequate infrastructure, limited digital skills, financial constraints, and the absence of supportive policies. Despite these barriers, there is strong interest and readiness among stakeholders to adopt digital learning if proper resources and strategies are provided. The study proposes recommendations including policy development, digital literacy programs, and investment in Learning Management Systems (LMS) to modernize RUCU's educational delivery.

**Keywords** - Online education, Digital transformation, Barriers, Learning Management System (LMS), Higher education, Tanzania.

## 1. INTRODUCTION

The global shift toward online education has become a defining feature of modern higher education. Online learning enables institutions to reach broader audiences, improve flexibility, and adapt to emerging pedagogical methods. It allows students to access course materials, participate in discussions, and complete assignments from any location, offering enhanced learning autonomy and accessibility [1], [2].

Despite the widespread adoption of digital learning globally, many universities in developing regions continue to face significant barriers. These include limitations in internet infrastructure, lack of faculty training, and financial constraints [3], [4]. As a result, online education remains underutilized in these contexts, even as it becomes increasingly essential for competitiveness in global academia.

Ruaha Catholic University (RUCU), located in Tanzania, is among the institutions facing these challenges. Despite having a robust ICT faculty and digital-oriented curriculum, RUCU has not yet fully integrated online education systems such as Learning Management Systems (LMS) or video conferencing tools like Zoom and Google Classroom into its academic framework [5], [6]. This gap is particularly concerning given the demonstrated benefits of digital transformation in higher education, such as increased scalability, personalized learning, and enhanced student engagement [7], [8].

Several studies emphasize the importance of institutional support, training, and funding to successfully transition to online education [9]–[11]. However, at RUCU, challenges such as inadequate infrastructure, low digital literacy among students and faculty, and resistance to change have limited progress. These factors are compounded by the absence of a formal policy guiding digital learning implementation [12].

This research aims to investigate the specific barriers hindering RUCU's adoption of online education. By focusing on technological readiness, human factors, and institutional policies, the study provides context-specific recommendations to support RUCU's transition into a digitally advanced learning institution.

## 2. Problem Statement

Although RUCU has an ICT-oriented academic structure and technical personnel, the university has not systematically integrated digital learning into its teaching and administrative systems. Students lack structured access to online learning platforms, and lecturers have limited support and training. The absence of institutional policies and funding hampers the transition to a modernized learning environment. This study seeks to identify and address the root causes of these limitations.

### 3. Research Objectives

#### 3.1 Main Objective:

To investigate the barriers hindering the implementation of online education at Ruaha Catholic University.

#### 3.2 Specific Objectives:

- i. To assess the current state of technological infrastructure and online readiness at RUCU.
- ii. To identify institutional, financial, and human challenges in adopting online education systems.
- iii. To propose actionable strategies for enhancing digital transformation at RUCU.

### 4. Literature Review

Online education has become a vital component of digital transformation in higher education, offering enhanced flexibility, accessibility, and scalability [1], [14]. However, its implementation in developing contexts, including Tanzania, faces several challenges.

The Technology Acceptance Model (TAM) highlights that adoption depends largely on perceived usefulness and ease of use [2]. In educational settings, users are more likely to adopt online platforms when they are intuitive and well-supported [10].

Technological barriers including unreliable internet, limited access to devices, and lack of integrated platforms are prevalent in African institutions [3], [5], [20]. Additionally, human factors, such as limited digital literacy and resistance to change among staff, further hinder adoption [10], [13]. Financial constraints and the absence of institutional policies also play a critical role in stalling progress [12], [19].

Empirical studies from countries like Kenya and Nigeria have shown that blended learning models are often more effective than fully online approaches, especially where infrastructure is weak [18], [19]. In Tanzania, poor ICT infrastructure and a lack of faculty training remain major obstacles, though partnerships and policy reform have been proposed as potential solutions [20].

Despite these barriers, the literature affirms that with appropriate support, online education can significantly improve learning outcomes and institutional competitiveness [1], [4], [14]. Few studies provide context-specific analysis of digital learning adoption in Tanzanian universities with strong ICT capacities. This study focuses on RUCU to bridge that gap and offer tailored insights.

### 5. Methodology

#### 5.1 Research Design

The study used a mixed-methods approach, combining quantitative surveys with qualitative interviews to gain a comprehensive understanding of barriers.

#### 5.2 Sampling and Data Collection

Respondents included:

- i. 25 students
- ii. 15 lecturers
- iii. 10 administrators

Sampling involved a combination of purposive and random techniques. Tools included questionnaires and structured interviews.

#### 5.3 Data Analysis

Quantitative data were analyzed using percentages and visualized through charts. Qualitative data were thematically coded to highlight recurring patterns.

## 6. Results and Discussion

### 6.1 Technological Infrastructure at RUCU

The findings reveal that 50% of administrative respondents believe Ruaha Catholic University lacks sufficient technological infrastructure to support effective online education. While some digital tools like Zoom and WhatsApp are in use, these are not formally institutionalized or integrated into a centralized learning system. Platforms such as Moodle are mentioned but remain underutilized and unstandardized across departments. Additionally, 80% of surveyed students reported persistent challenges with internet connectivity, citing slow speeds, unreliable networks, and dependence on personal mobile data plans. These limitations severely affect the feasibility of participating in synchronous online lectures or accessing course materials consistently.

### 6.2 Key Barriers to Implementation

Several barriers to online education emerged across stakeholder groups:

- i. **Financial Constraints (60%):** The majority of administrators cited limited funding as a major obstacle. Budget limitations have prevented RUCU from upgrading its digital infrastructure, investing in professional LMS platforms, or expanding access to digital learning resources.
- ii. **Resistance to Change (20%):** Some faculty and administrative staff demonstrate reluctance to adopt new teaching methods, favoring traditional, face-to-face instruction. This resistance often stems from a lack of familiarity with digital tools and fear of disrupting established teaching routines.
- iii. **Digital Illiteracy:** Both students and staff indicated insufficient training and limited confidence in using online platforms. Many users lack basic ICT skills necessary to navigate platforms such as Moodle, Zoom, or Google Classroom effectively.
- iv. **Lack of Institutional Policy:** RUCU currently lacks a formalized strategy or framework guiding the implementation and management of online education. The absence of clear guidelines results in fragmented efforts and inconsistent practices across departments.
- v. **Concerns About Academic Integrity and Cybersecurity:** Stakeholders expressed worries about cheating during online assessments and the risks associated with protecting students' and staff's personal data on digital platforms. These concerns hinder full institutional commitment to digital transformation.

### 6.3 Stakeholder Attitudes Toward Online Education

Despite the challenges, stakeholder responses suggest a generally positive outlook toward the potential of online education:

- i. **Administrators:** Approximately 80% of administrators believe that online education can effectively complement traditional learning. They recognize its value in improving access, flexibility, and scalability of education at RUCU.
- ii. **Lecturers:** Most lecturers prefer a blended learning approach, combining online tools with physical instruction. However, many feel under-supported, lacking training, resources, or incentives to fully integrate digital methods into their teaching practices.
- iii. **Students:** A significant number of students express support for hybrid learning models. They appreciate the flexibility of online classes but emphasize challenges related to internet affordability, device access, and the absence of structured online platforms.

## 7. Recommendations

Based on the study's findings, several key recommendations are proposed to address the barriers identified and support the successful implementation of online education at Ruaha Catholic University (RUCU):

### i. Infrastructure Investment

RUCU should prioritize upgrading its technological infrastructure. This includes providing **reliable, campus-wide high-speed internet** and fully adopting a **centralized Learning Management System (LMS)** such as Moodle. A stable and scalable digital backbone is critical for ensuring consistent access to lectures, assignments, and communication tools for both students and lecturers.

## ii. Policy Development

The university must develop **formal institutional policies** and a **digital transformation roadmap**. These should define objectives, implementation timelines, roles, and evaluation metrics for online education. Such policies would provide consistency, ensure accountability, and guide decision-making across departments.

## iii. Faculty Training

To overcome digital resistance and low adoption, RUCU should implement **mandatory training programs** for academic staff. These workshops should focus on digital pedagogy, effective use of online tools, content creation, and student engagement in virtual environments. Building digital teaching capacity will empower lecturers to design and deliver quality online instruction confidently.

## iv. Student Support

Students should be supported through initiatives that improve **digital inclusion**. The university can provide **free or subsidized internet access via campus Wi-Fi hotspots**, establish **laptop/device loan schemes**, and offer **digital literacy training** to help students navigate online platforms effectively. These efforts would reduce the digital divide and promote equitable access to learning.

## v. Cybersecurity Measures

As RUCU expands its online education systems, it must also prioritize **cybersecurity and academic integrity**. The institution should adopt data protection policies, secure login systems, and reliable proctoring tools for online assessments to prevent cheating and protect sensitive user data. This will build trust in the system and ensure compliance with ethical standards.

## vi. Strategic Partnerships

RUCU can benefit from collaborating with **technology companies, NGOs, and government agencies** to mobilize resources for digital transformation. These partnerships could help provide infrastructure support, software licenses, training programs, and technical expertise. Engaging with external stakeholders will accelerate implementation and reduce financial strain.

## 8. Conclusion

RUCU demonstrates readiness and willingness to transition to online education, but institutional, technical, and financial barriers persist. The study finds that meaningful digital transformation requires strategic policy formulation, investment in infrastructure, and capacity building. With a structured approach, RUCU can lead the way in modernizing Tanzanian higher education

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