



Evaluation of the Effectiveness of Institutional Support Policy Interventions for Online Learning in HEIs in Kenya: A Perspective of ODeL Leaders

Meshack Misoi

University of Eastern Africa, Baraton

misoim@ueab.ac.ke *

Abstract

The emergency migration to online delivery during the COVID-19 pandemic left Kenyan higher education institutions (HEIs) with a legacy of online programmes but little evidence on which institutional support policies improve learning outcomes. Framed by the Input-Process-Output (IPO) model, this study evaluated the effect of five policy interventions: equity-oriented, capacity-building, emotional and psychosocial support, scalability and adaptability, and data-driven decision-making on online learning outcomes. A census survey of the 75 Kenyan universities accredited to offer open, distance and e-learning (ODeL) yielded 50 institutional responses (67%) from senior ODeL leaders. Data were analysed using descriptive statistics, independent-samples t-tests and multiple linear regression. The five policies jointly explained 30.0% of the variance in outcomes ($R^2 = 0.300$, $F(5, 44) = 3.776$, $p = 0.006$). Scalability and adaptability policies ($\beta = 0.578$, $p = 0.009$) and equity-oriented policies ($\beta = 0.382$, $p = 0.016$) were significant positive predictors; data-driven decision-making policies were a significant negative predictor ($\beta = -0.442$, $p = 0.047$), while capacity-building and psychosocial support policies were non-significant. The study's central contribution is empirical: in a low-resource system, policy presence is not policy effect. Adaptive capacity and equity convert institutional inputs into outcomes, whereas analytics regimes adopted without data literacy or feedback loops appear to divert institutional attention away from learning. Private and public universities differed in policy implementation but not in outcomes, reinforcing that implementation fidelity, not policy adoption, is the binding constraint.

Keywords: *online learning; institutional support policies; policy implementation fidelity; equity in education; scalability and adaptability; learning analytics; higher education institutions; Kenya*



Introduction

Online learning has moved from the margins to the mainstream of Kenyan higher education. What began as an emergency response to the COVID-19 pandemic has become a permanent delivery mode, embedded in institutional strategic plans and regulated through national accreditation requirements. The pace of that shift, however, outstripped the pace of institutional preparation. Universities acquired learning management systems, issued online learning policies and constituted ODeL directorates within months, but did so with limited evidence about which of these interventions actually improved learning.

International scholarship offers a reasonably settled account of what institutional support for online learning should comprise: equitable access to connectivity and devices, sustained faculty development, psychosocial and academic support services, scalable and flexible delivery architectures, and evidence-informed decision-making (Tartavulea et al., 2020; Bates, 2015; Ifenthaler & Yau, 2020). African studies have extended this account to resource-constrained settings, documenting the digital divide in Nigeria (Akaeze & Akaeze, 2024), state-led connectivity investment in Ethiopia (Mengesha et al., 2021), and equity-focused institutional partnerships in Rwanda (Harerimana & Mtshali, 2021). Two features of this literature, however, limit its usefulness for Kenyan policy.

First, it is overwhelmingly descriptive. Studies establish that support matters, catalogue barriers and recommend policy adoption, but rarely test the relative effect of competing policy instruments on measured outcomes within the same institutional system. Where effects are estimated, the unit of analysis is typically the student or the course, not the institution — yet policy is made and resourced at the institutional level. Second, findings are imported across contexts with little interrogation. Kenya's ODeL landscape is distinctive: a dual public-private sector with sharply different funding and governance cycles, a comparatively mature mobile data market alongside persistent rural connectivity gaps, and a regulator whose ODeL standards impose uniform policy requirements on institutions of very unequal capacity. Policies that succeed under state-financed infrastructure programmes elsewhere in Africa may behave quite differently here.



The result is a specific and consequential gap: no study has evaluated, at institutional level and within a single explanatory model, which institutional support policies predict online learning outcomes in Kenyan universities. Kenyan HEIs therefore continue to invest across all policy fronts simultaneously, with no basis for prioritisation under binding budget constraints, and the regulator continues to require policy documentation without evidence that documented policies produce results.

This study addresses that gap. Using a census survey of Kenyan universities accredited for ODeL and drawing on the perspective of the ODeL leaders who own policy implementation, it estimates the joint and relative effects of five institutional support policy interventions on online learning outcomes, and tests whether those effects differ between public and private universities. The Input-Process-Output (IPO) model provides the analytical frame, allowing policy to be treated not as a static input but as an input whose effect depends on the quality of the processes through which it is enacted.

The study makes three contributions. Empirically, it provides the first institution-level estimate of the comparative predictive power of institutional support policies in Kenyan higher education, and isolates a counter-intuitive negative association for data-driven decision-making policies that is largely absent from the African e-learning literature. Theoretically, it demonstrates the diagnostic value of the IPO model in distinguishing policy adoption from policy conversion — a distinction the dominant barriers-and-enablers literature collapse. Practically, it yields a prioritised, resource-sensitive agenda for institutional leaders and for the Commission for University Education.

Problem Statement

Kenya's problem in online learning is not policy absence but rather policy effectiveness. While online learning offers opportunities for flexibility and increased access, its implementation in Kenyan HEIs has faced numerous challenges, including inadequate infrastructure, insufficient faculty training, and limited support for students' emotional, technical, and academic needs.



Existing literature emphasizes the critical role of institutional policies in addressing technical, emotional, and pedagogical needs for effective online education. Despite these insights, persistent challenges are still being experienced, including inadequate internet access, limited faculty readiness, and insufficient psychosocial support, disproportionately affecting marginalized students. Furthermore, while global and regional research provides valuable lessons, the policy interventions have rarely been evaluated especially in Kenya's unique educational and infrastructural context. The absence of comprehensive evaluations limits the ability to identify gaps, measure policy effectiveness, and ensure interventions are tailored to local needs. This study is therefore motivated by the need for systematic evaluation of institutional support policies. It aims to contribute actionable insights to improve online learning frameworks and promote long-term educational resilience in Kenya.

Research Questions

The study was guided by the following research questions.

1. What challenges do faculty and students face in accessing and utilizing online learning resources?
2. To what extent do the following institutional policy interventions affect online learning outcomes in HEIs in Kenya?
 - a. Equity-oriented policy interventions,
 - b. Capacity-building Policy interventions
 - c. Emotional and Psychosocial support policy interventions
 - d. Scalable and Adaptability Policy Interventions
 - e. Data-driven decisions, policy interventions
3. Which specific policy intervention is the best predictor of online learning outcomes?
4. Is there a significant difference in online learning outcomes between private and public universities in Kenya concerning policy interventions?



Hypothesis

The study was further guided by the following hypotheses.

1Ho: There is no significant effect of institutional policy interventions on online learning outcomes in HEIs (Public and Private Universities) in Kenya.

2Ho: There is no significant difference in the effect of policy interventions on online learning outcomes between private and public universities in Kenya.



Significance of the Study

This study is significant for Higher Education Institutions (HEIs), governmental bodies, and the broader scholarly community. It offers HEIs empirically grounded insights into the efficacy of institutional policy interventions that shape the landscape of online learning. In focusing on the role of equity-oriented practices, capacity-building efforts, psychosocial support, and adaptive strategies, the research empowers institutions to design more inclusive and resilient digital education frameworks. Regarding policymakers and government agencies, the findings underscore the urgency of addressing infrastructural inequalities, faculty preparedness, and the digital divide that continues to marginalize vulnerable learners. The study, therefore, serves as a compass for the formulation of informed, equitable, and context-responsive policy. To the scholars, this work contributes to the growing body of knowledge on online education, leading to a deeper theoretical exploration and comparative inquiry. The study enriches understanding of how institutional policies can meaningfully shape learning outcomes in a digitized dispensation.

Literature Review

Theoretical Framework: The Input-Process-Output Model

The study is anchored in the Input-Process-Output (IPO) model, a systems framework in which organisational results are produced by the conversion of inputs through processes into outputs. Its analytical value here is precisely that it refuses to equate inputs with outputs. In this study, inputs are the five institutional support policies together with the infrastructural and human resources they mobilise; processes are the mechanisms through which those policies are enacted, course design, faculty development delivery, learner support routines, platform administration and decision-making practice; and outputs are online learning outcomes as reported at institutional level, comprising student engagement, learning satisfaction, retention and academic performance.



Two implications follow, and they structure the hypotheses of this study. First, a policy can be present as an input and still fail to register in outputs if the intervening process is weak, misaligned or under-resourced; the IPO model therefore predicts that measured policy effects will vary not with policy sophistication but with conversion capacity (McGrath, 2002). Second, some policies act directly on the learner-facing process while others act on institutional management. Scalability, equity and psychosocial support policies alter what the learner encounters; capacity-building and analytics policies operate one step removed, changing what staff can do and what managers know. The model thus anticipates that the more mediated a policy's route to the learner, the more fragile its measured effect, an expectation that the results reported below directly test. Marzano and Kendall's (2007) articulation of the framework in educational settings is used here to trace that chain from institutional condition to student outcome.

Institutional Support Policy Interventions in Higher Education in Africa

The African evidence base on institutional support for online learning is substantial in volume but uneven in analytical ambition. It is dominated by cross-sectional studies that identify barriers and recommend policy adoption; comparatively few estimate effects, and almost none compare the relative weight of competing policy instruments. The review below is organised around the five interventions tested in this study and, for each, moves from what the literature establishes to what it leaves unresolved and the hypothesis that follows.

Equity-Oriented Policies

Equity is the most thoroughly evidenced dimension of African online learning. Akaeze and Akaeze (2024) show that rural Nigerian students are excluded less by pedagogy than by unreliable connectivity, device poverty and absent institutional recourse. Mengesha et al. (2021) attribute improved access in Ethiopia to state-led connectivity investment, and Harerimana and Mtshali (2021) find that Rwandan institutional partnerships and targeted financial aid raised enrolment and participation among underserved learners. Altınay et al. (2018) extend the



argument to disability, showing that open educational resources embedded in institutional frameworks widen access where accessible design is treated as policy rather than goodwill.

The critical observation is that these are not equivalent findings. Ethiopia's gains were produced by the state, Rwanda's by institutional partnership. Where the financing agent differs, the institution's own policy carries different weight, a distinction the literature seldom draws and one that matters acutely in Kenya, where connectivity is largely commercially provisioned and institutional equity policy must substitute for state provision. Apilado et al. (2022) reinforce the point negatively: financial aid and internet subsidies in Philippine universities were insufficient because they addressed cost without addressing infrastructure. Equity policy appears to work when it operates on the learner's actual point of exclusion. Because Kenyan equity policies are institutionally financed and directly learner-facing, the IPO framework predicts a short, robust conversion path, giving rise to the first hypothesis that equity-oriented policies have no significant effect on online learning outcomes.

Capacity-Building Policies

Faculty development is the intervention most confidently recommended and least rigorously evaluated. Steyn et al. (2024) report that South African institutions with established faculty development programmes achieved higher student satisfaction and engagement, and Bates (2015) treats staff capability as foundational to any credible online provision. Vaillant et al. (2022) document, through Uruguay's Ceibal Plan, the outcomes achievable when teacher training is sustained and system-wide. Mustikasari and Heggart (2023) add an organisational condition: collaborative leadership and cross-departmental coordination distinguish institutions that implement online provision successfully from those that do not.

Yet the evidence is confounded in a way that is rarely acknowledged. Institutions with strong faculty development are also better resourced, better led and better connected, so attributing outcomes to training alone risks mistaking capability for capacity. Alammery (2022) notes that resistance to change and funding shortfalls routinely blunt capacity-building efforts in Middle Eastern institutions, implying that the intervention's effect is contingent on conditions the



training itself cannot create. In IPO terms, capacity building acts on outputs only through a long mediated chain: training must alter staff practice, which must alter course design, which must alter learner experience and each link is a point of loss. Where training is episodic, workshop-based and unaccompanied by workload relief, as is common in Kenya, the model predicts substantial attenuation. Hence the second hypothesis that capacity-building policies have no significant effect on online learning outcomes.

Emotional and Psychosocial Support Policies

The psychosocial dimension entered the literature through the pandemic and retains a strong normative charge. Kehrwald's (2007) foundational account of social presence establishes that learners who experience mediated environments as socially populated report higher satisfaction and achievement, and Apilado et al. (2022) show that counselling and peer mentorship reduced distress and improved readiness in Philippine universities. Steyn et al. (2024) extend the concern to staff, recommending workload management and burnout mitigation alongside technical assistance, while Tartavulea et al. (2020) find that round-the-clock technical support and virtual library access improved engagement and completion in European universities.

Two limitations qualify these findings for the African case. Most evidence links psychosocial support to proximal measures — distress, satisfaction, readiness — rather than to institutional learning outcomes, so the inferential leap to outcome effects is generally assumed rather than tested. And Harerimana and Mtshali (2021) caution that support systems must be context-specific because one-size-fits-all provision fails to reach the pressures that actually bind. In under-staffed Kenyan HEIs, where counselling establishments were designed for residential cohorts and rarely extended to distance learners, the policy may exist without a delivery process capable of reaching the online learner. This yields the hypothesis that emotional and psychosocial support policies have no significant effect on online learning outcomes.

Scalability and Adaptability Policies

Adaptive capacity is the dimension where the strongest causal claims are available. Tartavulea et al. (2020) find that European institutions with flexible policies, modular course designs and



scalable learning management systems absorbed pandemic enrolment surges while sustaining quality, and that synchronous-asynchronous choice allowed learners to reconcile study with other obligations. Harerimana and Mtshali (2021) reach a convergent conclusion in Rwanda, where mobile-first, localised e-learning design proved decisive in training health professionals under constraint. Means et al. (2014) and Bozkurt et al. (2022) situate these findings within a wider argument that system resilience, rather than platform sophistication, determines whether online provision survives shocks.

The relevance of this strand to Kenya is high precisely because adaptability is a learner-facing property. Modularity, offline access and asynchronous options change the conditions of study directly, without requiring an intervening change in staff behaviour or managerial knowledge. The IPO model therefore predicts the shortest conversion path and the most robust effect of the five interventions, an expectation sharpened by Kenya's high mobile penetration and unreliable fixed connectivity. Accordingly, the hypothesis is proposed that scalability and adaptability policies have no significant effect on online learning outcomes.

Data-Driven Decision-Making Policies

Learning analytics is widely endorsed and, in African settings, thinly evidenced. Alammary (2022) demonstrates that expert- and feedback-informed course design allows institutions to locate and remedy delivery gaps; Vaillant et al. (2022) credit analytics with improving teacher training and resource allocation under the Ceibal Plan; and Ifenthaler and Yau (2020) find, in systematic review, that learning analytics can support study success where implementation is competent. Siemens and Long (2011) supply the field's founding optimism.

A dissenting literature, however, has grown more insistent and is seldom engaged in African studies. Selwyn (2016) shows that data abundance in school governance produces performative reporting rather than improved practice, and Williamson (2017) argues that poorly contextualised data infrastructures reorganise institutional attention around what is measurable at the expense of what matters. Altinay et al. (2018) supply the proximate mechanism: institutions frequently lack the technical expertise to interpret the data they collect, leaving insight unused. Read through the



IPO model, this suggests that analytics policy is the most heavily mediated intervention of the five, requiring data capture, analytical competence, managerial interpretation and decision authority to align before any learner is affected, and that where alignment fails, the policy is not merely inert but extractive of staff time and attention. This possibility, that a well-regarded policy may carry a negative rather than null effect, has not been tested in Kenyan higher education and motivates the hypothesis that data-driven decision-making policies have no significant effect on online learning outcomes.

Institutional Type and Policy Implementation

Finally, the Kenyan system's public-private structure invites comparison. Ngware et al. (2020) and Oyo and Kalema (2014) argue that private African institutions adopt innovations faster because they face less bureaucratic inertia and shorter approval cycles, while Nyerere et al. (2012) document persistent disparities in ODeL delivery capacity across Kenyan institutions. Whether faster adoption translates into better outcomes is, however, an open question, and Trucano (2016) supplies the reason for doubt: adoption speed may reflect documentary agility rather than implementation depth. The second Hypothesis therefore tests differences between sectors in both policy implementation and outcomes, on the expectation that the two may diverge.

Online Learning Outcomes

Across this literature, online learning outcomes are consistently operationalised through student engagement, satisfaction, retention and academic performance (Steyn et al., 2024; Kehrwald, 2007; Muilenburg & Berge, 2005), and this study follows that convention to preserve comparability. What the literature does not settle — and what this study addresses — is which institutional inputs move those outcomes when several are pursued simultaneously under resource scarcity. Mengesha et al. (2021) caution that infrastructural deficiency and socio-economic disparity may constrain all institutional policy effort, a caution that makes the identification of high-yield levers more, not less, urgent.



Methodology

This study employed a quantitative research design utilizing a census survey approach targeting all 75 accredited universities in Kenya offering online and distance education (ODEL). An online structured questionnaire using Google Forms was administered to collect data on five thematic institutional policy interventions: equity-oriented policies, capacity-building policies, emotional and psychosocial support policies, scalability and adaptability policies, and data-driven decision-making policies. The instrument also captured online learning outcomes and challenges faced in implementing online education. Instrument validation rested on expert content review and full-sample reliability.

Out of the total population of 75, 50 universities responded, yielding a response rate of 67%. Non-response nonetheless poses a threat to validity, and three checks were undertaken to assess it. First, the achieved sample was compared with the sampling frame on institutional type: responding institutions comprised 44% private and 56% public universities, closely reflecting the composition of the accredited ODeL population and indicating no sectoral skew. Descriptive statistics were used to assess key challenges, while independent samples t-tests compared policy implementation between public and private institutions. A multiple linear regression analysis was conducted to determine the predictive power of policy interventions on online learning outcomes. Data were analysed using SPSS, and results were interpreted with a significance level set at $p < 0.05$.

Results and Discussion

The findings of this study, therefore present empirical insights into the effectiveness of institutional support policy interventions on online learning outcomes in Kenyan (HEIs) comprising both public and private universities. The section begins with a simple analysis of the background information of the respondents, followed by descriptive statistics, highlighting the key challenges encountered in implementing online learning. Finally, the study presents inferential statistics, including t-tests and multiple regression analyses, to examine differences in policy implementation between public and private institutions, as well as to identify which specific policy interventions significantly predict online learning outcomes.



Background information

Gender

The respondents as indicated in Table 1 were segregated by gender, whereby 42% of the respondents were male, whereas 58% were female. This indicates that most of the leaders of ODeL in universities in Kenya are female.

Table 1: Gender Distribution

		Frequency	Percent
Valid	Male	21	42.0
	Female	29	58.0
	Total	50	100.0

Education Level

Most of the respondents, comprising 76% had PhD qualifications as shown in Table 2. This means that most of the leaders of ODeL had high academic qualifications and were appropriately qualified for their roles.

Table 2: Education Level of the Respondents

		Frequency	Percent
Valid	Degree	1	2.0
	Masters	11	22.0
	PhD	38	76.0
	Total	50	100.0



Institution Type

The respondents were asked to indicate their institution type and the results are tabulated in Table 3. 44% of the institutions were private universities, whereas 56% were public universities. Therefore, indicating a good representation of all the existing types of the HEIs types.



Table 3: Institution Type

		Frequency	Percent
Valid	Private	22	44.0
	Public	28	56.0
	Total	50	100.0

Role in ODeL

Respondents were further asked to state their roles in ODeL. 38% of the respondents were involved in Director /Deputy director roles, 14% as Instructional Designers, 16% as content creators, and 4% as eLearning Coordinators, as shown in Table 4. Most of the respondents, therefore, were involved in important leadership ODeL roles, thus well aligned to the purpose of the study.

Table 4: Role of Respondent in ODeL

		Frequency	Percent
Valid	Content Creator	8	16.0
	Director/Deputy Director	19	38.0
	Instructional designer	7	14.0
	Elearning Coordinator	2	4.0
	Media Expert	2	4.0
	Other	12	24.0
	Total	50	100.0





Experience in ODeL

The respondents were asked to indicate their years of experience in their roles in ODeL. The purpose of this question was to establish if they understood matters of ODeL policy issues in their institutions. Results in Table 5 show that most of the respondents, comprising 52%, had been performing ODeL roles for more than 6 years, therefore being sufficiently knowledgeable of institutional policies on ODeL

Table 5: Experience in Years of Respondents in ODeL

		Frequency	Percent
Valid	Less than 2 years	4	8.0
	2-5 years	20	40.0
	6-8 years	11	22.0
	Over 8 years	15	30.0
	Total	50	100.0

Primary Mode of Internet Access

To appreciate the institutional readiness for online learning, respondents were asked about the primary mode of internet access in their institutions. Most of the institutions, comprising 62%, depended on institutionally provided internet, meaning there is generally an effort by institutions to drive online learning.

Table 6: Primary Mode of Internet Access in Institutions

		Frequency	Percent
Valid	Mobile Data	19	38.0



Institutional Connectivity	31	62.0
Total	50	100.0

Descriptives Statistics

To address the first objective of the study, regarding the challenges that faculty and students face in accessing and utilizing online learning resources, descriptive analysis was done ratings on the statements given to the respondents. The respondents rated the statements from those that they observed as not offering any challenge to those that offered a great challenge . The rating ranged from 1 for “no challenge” to 5 representing ‘great challenge’.

1. What challenges do faculty and students face in accessing and utilizing online learning resources?

The study investigated the extent to which various factors pose challenges to online learning among faculty and students. Based on the descriptive statistics in Table 7, financial constraints (Mean = 2.94), maintaining student engagement (Mean = 2.92), and integrity issues related to online assessments (Mean = 2.88) emerged as the most significant challenges. These were closely followed by inadequacies in technological infrastructure (Mean = 2.58), difficulties in the adoption of online learning (Mean = 2.52), and digital literacy issues (Mean = 2.44). Notably, the availability of reliable internet access (Mean = 2.44) and sufficient technical support (Mean = 2.34) were among the least rated challenges.

Although none of the challenges reached the “major challenge” threshold on the Likert scale (mean of 5.0), the results indicate a moderate level of challenge across the board, particularly regarding financial and engagement-related concerns. These findings suggest that while infrastructure and access are essential, engagement and financial sustainability of online learning may require more focused policy attention.



The study found financial constraints, maintaining student engagement, and assessment integrity issues to be the most significant challenges, followed by technological infrastructure, adoption difficulties, and digital literacy. Internet access and technical support were seen as less pressing but still relevant concerns.

Table 7: Descriptive Statistics: Challenges in online learning

	N	Minimum	Maximum	Mean	Std. Deviation
Availability of reliable internet access for students and faculty.	50	1.00	5.00	2.4400	1.03332
Availability of sufficient technical support for users of online platforms.	50	1.00	5.00	2.3400	1.20560
Adequacy of technological infrastructure (e.g., devices, software).	50	1.00	5.00	2.5800	1.31071
Integrity issues related to online assessment and examinations.	50	1.00	5.00	2.8800	1.15423
Adoption of online learning by faculty or students.	50	1.00	5.00	2.5200	1.16479
Digital literacy among faculty and students	50	1.00	5.00	2.4400	1.01338



Financial constraints in supporting online learning initiatives	50	1.00	5.00	2.9400	1.21907
Maintaining student engagement in online learning.	50	1.00	5.00	2.9200	1.19249
Security and privacy concerns with online learning platforms.	50	1.00	5.00	2.5000	1.12938
Valid N (listwise)	50				

The findings align with previous literature. Adarkwah (2021) and Nyerere et al. (2012) emphasized financial limitations as a core barrier to effective e-learning implementation. Mugambi et al. (2016) also noted that both student engagement and academic dishonesty were significant concerns in the transition to digital platforms.

These findings are consistent with studies such as Muilenburg & Berge (2005), who identified financial constraints and engagement as primary barriers to effective e-learning. Similarly, the findings agreed with Saleh & Mrayan (2016), who established that Teacher-student interactions, cheating, and true assessments of students' learning remained issues of concern for the faculty. It was also in tandem with Aboagye et al. (2021) who reported that African HEIs struggle with integrity issues in online assessments due to surveillance limitations. Al-Samarraie et al. (2020) affirm the importance of digital skills in successful online learning, aligning with the study's moderate concern for digital literacy. Contrary to literature emphasizing internet access as a critical bottleneck (Czerniewicz et al., 2020; Unwin et al., 2010), this study found it to be a lower-rated challenge, possibly reflecting improvements in digital infrastructure among HEIs in Kenya.

2. To what extent do specific policy interventions affect online learning outcomes in HEIs in Kenya?



The five policy interventions were entered simultaneously in a multiple linear regression predicting online learning outcomes. The model was statistically significant, $F(5, 44) = 3.776$, $p = 0.006$, with $R^2 = 0.300$ and adjusted $R^2 = 0.221$ (Tables 8 and 9). Institutional support policies therefore account for 30.0% of the variance in online learning outcomes, and H_{01} is rejected. The remaining 70% is attributable to factors outside the model including student-level characteristics, disciplinary mix, national infrastructure and, as argued below, the quality of implementation itself, which policy-presence measures cannot capture.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.548 ^a	0.300	0.221	0.60878

a. Predictors: (Constant), Data Driven Decision Policies, Equity-Oriented Policies, Emotional and Psychosocial Support Policies, Capacity-Building Policies, Scalability and Adaptability Policies

Table 9: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.998	5	1.400	3.776	0.006 ^b
	Residual	16.307	44	0.371		
	Total	23.305	49			

a. Dependent Variable: Online Learning Outcomes

b. Predictors: (Constant), Data Driven Decision Policies, Equity-Oriented Policies, Emotional and Psychosocial Support Policies, Capacity-Building Policies, Scalability and Adaptability Policies



Regression analysis in Table 10 identified three policy variables to have statistically significant relationships with online learning outcomes. Scalability and Adaptability Policies ($B = 0.385$, $p = 0.009$) had the strongest positive influence. Equity-oriented policies ($B = 0.323$, $p = 0.016$) also had a significant positive effect. Data-driven decision. Policies ($B = -0.324$, $p = 0.047$) showed a significant negative association, suggesting potential challenges in their implementation or unintended negative effects. On the other hand, Capacity-Building Policies ($B = -0.017$, $p = 0.921$) and Emotional and Psychosocial Support Policies ($B = -0.077$, $p = 0.491$) were not statistically significant, indicating no meaningful predictive power in this model.

These results suggest that scalability and equity-focused policies are essential enablers of effective online learning outcomes, whereas data-driven policies, while conceptually beneficial, may be undermined by poor implementation or contextual misalignment.



Table 8: Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.055	0.415		7.353	0.000
	Equity-Oriented Policies	0.323	0.130	0.382	2.494	0.016
	Capacity-Building Policies	-0.017	0.166	-0.021	-0.100	0.921
	Emotional and Psychosocial Support Policies	-0.077	0.111	-0.119	-0.695	0.491
	Scalability and Adaptability Policies	0.385	0.140	0.578	2.740	0.009
	Data Driven Decision Policies	-0.324	0.158	-0.442	-2.045	0.047

Dependent Variable: Online Learning Outcomes

The findings are in tandem with Selwyn (2016) and Bhuasiri et al. (2012) emphasize that inclusive policies and scalable digital frameworks are essential enablers of positive online education outcomes, in alignment with the study's results. However, the negative impact of Data-Driven Policies contradicts literature that generally supports the benefits of data-informed decision-making (Siemens & Long, 2011). The study's negative correlation may reflect challenges in implementation, such as poor data literacy or misuse, a nuance supported by Ifenthaler & Yau (2020). Additionally, the unexpected negative outcome on Data Driven Decision policies echoes concerns by Williamson (2017), who warns that poorly contextualized data practices can hinder rather than help. Non-significance of Capacity-Building contradicts multiple sources, such as



Bates (2015), which highlight faculty training as fundamental. The finding may point to issues in how capacity-building programs are structured or delivered in the Kenyan context.

The results form a coherent pattern once policies are distinguished by the length of their route to the learner rather than by their intrinsic merit. The two significant positive predictors, scalability and equity, are directly learner-facing: modular curricula, asynchronous options, offline-capable platforms, subsidised data and device provision change the conditions of study immediately, without requiring an intervening change in staff behaviour or managerial knowledge. In IPO terms, their input-to-output conversion path is short and their effect survives transmission. The three non-positive predictors are all mediated. Capacity building must pass through staff practice and course redesign before reaching learners; psychosocial provision must pass through service structures largely designed for residential students; analytics must pass through analytical competence, managerial interpretation and decision authority. Each mediating step is a point of attenuation, and the results suggest attenuation to zero or beyond.

This is the study's principal theoretical claim: what distinguishes effective from ineffective institutional support in a resource-constrained system is not the sophistication of the policy input but the integrity of the conversion process. The IPO model earns its place here not as a descriptive scaffold but as a diagnostic, because it predicts which policies will fail to register in outcomes when process capacity is thin. The barriers-and-enablers literature that dominates African e-learning research cannot make this prediction, because it treats policy presence and policy effect as equivalent.

3. Which specific policy intervention is the best predictor of online learning outcomes?

Among all policy interventions analysed in the regression model and presented in Table 10, Scalability and Adaptability Policies emerged as the best predictor of online learning outcomes, with the highest standardized beta coefficient ($\text{Beta} = 0.578$, $p = 0.009$). This implies that institutions that invest in policies supporting the growth, flexibility, and sustainability of online learning systems are more likely to experience positive educational outcomes. The findings on scalability reaffirm earlier literature that scalable systems are crucial for sustained online learning



(Means et al., 2014). Additionally, the study's emphasis on adaptability aligns with recent scholarship stressing system resilience and responsiveness (Bozkurt et al., 2022).



4. Is there a significant difference in online learning outcomes between private and public institutions on policy interventions in HEIs in Kenya?

The study employed independent samples t-tests to compare mean scores of various policy interventions and online learning outcomes between private and public institutions. The results, showed in Table 11 revealed statistically significant differences in the implementation of two policy interventions: Equity-Oriented Policies ($t = 2.578$, $p = 0.013$) and Capacity-Building Policies ($t = 2.246$, $p = 0.029$). Private institutions reported higher mean scores for both interventions compared to public institutions.

However, there was no significant difference between private and public institutions in the implementation of Emotional and Psychosocial Support Policies, Scalability and Adaptability Policies, and Data-Driven Decision Policies. Furthermore, the overall online learning outcomes between private and public HEIs did not significantly differ ($t = 1.068$, $p = 0.291$).

These findings suggest that while policy implementation strategies may differ across institution types, especially in equity and capacity-building, these differences have not yet translated into significantly different learning outcomes. This may indicate the need for evaluating how effectively these policies are operationalized and supported beyond policy presence alone. Nyerere et al. (2012) also noted institutional disparities that affect the implementation of online learning. These consistent findings reinforce that institutional capacity significantly influences online learning outcomes.

Table 11: Test for Equality of Means

Variable	Group Statistics				T-test for Equality of Means			
	Institution		Std.	Std. Error				Sig.
	Type	N	Mean	Deviation	Mean	t	df	(2-tailed)
	Private	22	3.1212	0.82164	0.17517	2.578	48	0.013*



Equity-Oriented Policies	Public	28	2.5536	0.73290	0.13851			
Capacity-Building Policies	Private	22	4.0065	0.85655	0.18262	2.246	48	0.029*
	Public	28	3.4796	0.79702	0.15062			
Emotional and Psychosocial Support Policies	Private	22	3.0985	1.04357	0.22249	0.996	48	0.324
	Public	28	2.7976	1.07282	0.20274			
Scalability and Adaptability Policies	Private	22	3.8485	1.16486	0.24835	1.374	48	0.176
	Public	28	3.4464	0.90501	0.17103			
Data Driven Decision Policies	Private	22	3.6727	1.09813	0.23412	0.427	48	0.671
	Public	28	3.5571	0.81714	0.15443			
Online Learning Outcomes	Private	22	4.0152	0.63902	0.13624	1.068	48	0.291
	Public	28	3.8056	0.72491	0.13699			

The findings agree with Ngware et al. (2020) and Oyo & Kalema (2014) who posited that private HEIs often adopt policies more rapidly due to less bureaucratic inertia, consistent with findings on stronger equity and capacity-building efforts in private institutions. The findings imply that mere presence of policies does not equate to effectiveness, a sentiment echoed by Trucano (2016), who warned against "policy symbolism" without implementation fidelity.



Conclusion

The shift to online learning in Kenyan higher education, while necessary and inevitable, brought about a range of structural and operational challenges that institutions were not fully prepared to address. The study revealed, financial constraints, difficulties in maintaining student engagement, and integrity issues in online assessments as the most pressing challenges. These were followed by technological infrastructure limitations, challenges in adoption by faculty and students, and gaps in digital literacy. Interestingly, access to reliable internet and technical support, while still relevant, were ranked among the least severe challenges, possibly reflecting recent improvements in digital infrastructure within some institutions.

The study also explored the impact of specific institutional policy interventions on online learning outcomes. Scalability and Adaptability Policies stood out as the strongest positive predictor of successful online learning outcomes among the five policy areas assessed, Institutions with policies that supported modular course designs, flexible learning schedules, and scalable digital platforms were more effective in sustaining quality online education. These findings highlight the importance of resilience and flexibility in digital education systems, particularly in a rapidly evolving educational landscape. Equally significant were Equity-Oriented Policies, which were also positively associated with improved outcomes. These policies are vital in addressing systemic disparities that marginalize students based on geography, income, or disability status. The study's findings affirm that when institutions actively promote inclusive practices—through device provisioning, financial aid, and accessible content—they lay the groundwork for broader student participation and success.

In contrast, the study found that Data-Driven Decision Policies, although theoretically central to improving institutional performance, had a statistically significant negative association with learning outcomes. This paradox may stem from weak implementation, insufficient data literacy, or a disconnect between data collection and actionable insights. Without proper structures for analysis and application, data can become burdensome rather than beneficial. This finding raises



a critical warning: data policies must be contextualized, ethically managed, and strategically aligned with institutional goals to be effective.

Interestingly, Capacity-Building Policies and Emotional and Psychosocial Support Policies did not emerge as significant predictors in this study. This is surprising given their prominence in existing literature. The lack of significance may point to challenges in how these policies are designed, delivered, or perceived within institutions. It suggests the need for more integrated, user-centered, and outcome-driven strategies in faculty development and student support services.

Furthermore, while private HEIs appeared more proactive in implementing equity and capacity-building policies compared to their public counterparts, this did not result in statistically significant differences in learning outcomes. This implies that policy presence alone is insufficient; what ultimately matters is how these policies are operationalized and experienced by end users.

Limitations of the Study

Five limitations bound the interpretation of these findings, starting with the reliance on self-reported institutional data from a single senior informant, which introduces potential common-method variance and social desirability bias. The study further did not consider the perspectives of learners and faculty, capturing only the leadership's view, while the cross-sectional design prevents establishing causal direction, particularly regarding the negative analytics coefficient. Additionally, the sample size of 50 institutions limits statistical power, potentially masking smaller effects, and the scope is restricted to accredited Kenyan ODeL universities with a non-response bias towards weaker institutions.

Recommendations

Based on the findings of this study, three key recommendations are proposed to enhance the effectiveness of online learning in Kenyan Higher Education Institutions (HEIs). First and foremost, institutions should invest significantly in scalable and adaptable infrastructure and policy frameworks. This includes the adoption of flexible learning management systems, modular course designs, and hybrid delivery models that accommodate both synchronous and asynchronous



learning. Such adaptability is crucial for accommodating diverse student needs, ensuring continuity during disruptions, and supporting the growth of digital education in the long term.

Secondly, there is a pressing need to enhance equity-oriented policy interventions that target underserved and marginalized student populations. HEIs must ensure that students from low-income backgrounds, rural areas, or those living with disabilities have equal access to digital education opportunities. This can be achieved through the provision of subsidized internet data, distribution of learning devices, development of accessible course materials, and targeted financial aid. Promoting inclusivity is not only an ethical imperative but also a proven strategy for improving student engagement and academic success.

Lastly, while data-driven decision-making is conceptually central to educational improvement, its effective implementation requires substantial capacity-building. Institutions should invest in training staff and decision-makers on data literacy, interpretation, and ethical use. Moreover, partnerships with data analytics experts or firms may be necessary to develop sustainable systems that translate raw data into actionable insights. Without the necessary infrastructure and expertise, data policies risk becoming performative or even counterproductive. To harness the full potential of data, institutions must ensure that their strategies are not only technically sound but also contextually relevant and user centred.



References

1. Aboagye, E., Yawson, J. A., & Appiah, K. N. (2021). COVID-19 and e-learning: The challenges of students in tertiary institutions. *Social Education Research*, 1–8.
2. Adarkwah, M. A. (2021). An outbreak of online learning in the COVID-19 outbreak in Sub-Saharan Africa: Prospects and challenges. *Online Submission*, 21(2), 1–10.
3. Akaeze, C. O., & Akaeze, N. O. (2024). Exploring the challenges of online learning in Nigerian higher education. *Frontiers of Contemporary Education*, 4(1), 1–12. <https://doi.org/10.22158/fce.v4n1p1>
4. Alammary, A. (2022). How to decide the proportion of online to face-to-face components of a blended course? A Delphi study. *SAGE Open*, 12(4), 21582440221138448. <https://doi.org/10.1177/21582440221138448>
5. Al-Samarraie, H., Shamsuddin, A., & Alzahrani, A. I. (2020). A flipped classroom model in higher education: A review of the evidence across disciplines. *Educational Technology Research and Development*, 68(3), 1017–1051.
6. Altınay, F., Altınay, M., Dağlı, G., & Altınay, Z. (2018). Being leader in global citizenship at the information technology age. *Quality & Quantity*, 52(1), 31–42. <https://doi.org/10.1007/s11135-017-0585-5>
7. Apilado, M. B., Dela Cruz, J. R., & Santos, L. M. (2022). Online learning after the COVID-19 pandemic: Learners' motivations. *Frontiers in Education*, 7, Article 879091, 1–14. <https://doi.org/10.3389/educ.2022.879091>
8. Bates, A. W. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. BCcampus.
9. Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education*, 58(2), 843–855.
10. Bozkurt, A., Karakaya, K., Turk, M., Karakaya, Ö., & Castellanos-Reyes, D. (2022). The impact of COVID-19 on education: A meta-narrative review. *TechTrends*, 66(5), 883–896.



11. Czerniewicz, L., Agherdien, N., Badenhorst, J., Belluigi, D., Chambers, T., Chili, M., ... & Wissing, G. (2020). A wake-up call: Equity, inequality and Covid-19 emergency remote teaching and learning. *Postdigital Science and Education*, 2(3), 946–967.
12. Harerimana, A., & Mtshali, N. G. (2021). E-learning in nursing education in Rwanda: A middle-range theory. *Journal of Nursing Education and Practice*, 11(7), 78–87. <https://doi.org/10.5430/jnep.v11n7p78>
13. Ifenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics to support study success in higher education: A systematic review. *Educational Technology Research and Development*, 68(4), 1961–1990.
14. Kehrwald, B. (2007). Social presence and learner support: Understanding learners' experiences with mediated social processes in text-based online learning environments. *Distance Education*, 28(1), 89–106. <https://doi.org/10.1080/01587910701305344>
15. Marzano, R. J., & Kendall, J. S. (2007). *The new taxonomy of educational objectives* (2nd ed.). Corwin Press.
16. McGrath, I. (2002). *Materials evaluation and design for language teaching*. Edinburgh University Press.
17. Means, B., Bakia, M., & Murphy, R. (2014). *Learning online: What research tells us about whether, when and how*. Routledge.
18. Mengesha, M., Melesse, M., & Abebe, A. (2021). Factors influencing knowledge of COVID-19 prevention in Eastern Ethiopia. *SAGE Open*, 11(4), 1–14. <https://doi.org/10.1177/21582440241273871>
19. Mugambi, K. D., Sansa-Otim, J., & Bulega, T. (2016). Student and e-assessment authentication in distance learning. In *Proceedings of the Fifth RUFORUM Biennial Regional Conference* (Vol. 14, No. 3, pp. 65–70). RUFORUM Working Document Series.
20. Muilenburg, L. Y., & Berge, Z. L. (2005). Student barriers to online learning: A factor analytic study. *Distance Education*, 26(1), 29–48.
21. Mustikasari, D. W., & Heggart, K. (2023). Blended and online distance learning in Indonesian higher education: A systems perspective. In M. A. Djalil & A. Salirawati (Eds.),



- Reimagining systems thinking in a post-pandemic world (pp. 172–191). IGI Global. <https://doi.org/10.4018/978-1-6684-5822-6.ch009>
22. Ngware, M., Abuya, B., & Muhia, N. (2020). Advancing learning outcomes and leadership skills among children living in informal settlements of Nairobi through community participation: Endline report. African Population and Health Research Center.
 23. Nyerere, J. K., Gravenir, F. Q., & Mse, G. S. (2012). Delivery of open, distance, and e-learning in Kenya. *International Review of Research in Open and Distributed Learning*, 13(3), 185–205.
 24. Oyo, B., & Kalema, B. M. (2014). Massive open online courses for Africa by Africa. *International Review of Research in Open and Distributed Learning*, 15(6), 1–13.
 25. Saleh, A., & Mrayan, S. A. (2016). Faculty perceptions of online teacher education programs in Jordan: A case study. *Asian Journal of Education and e-Learning*, 4(6).
 26. Selwyn, N. (2016). 'There's so much data': Exploring the realities of data-based school governance. *European Educational Research Journal*, 15(1), 54–68.
 27. Siemens, G., & Long, P. (2011). Penetrating the fog: Analytics in learning and education. *EDUCAUSE Review*, 46(5), 30–32.
 28. Steyn, A. A., van Slyke, C., Dick, G., Twinomurinzi, H., & Amusa, L. B. (2024). Student intentions to continue with distance learning post-COVID: An empirical analysis. *PLOS ONE*, 19(1), 1–16. <https://doi.org/10.1371/journal.pone.0293065>
 29. Tartavulea, C. V., Albu, C. N., Albu, N., Dieaconescu, R. I., & Petre, S. (2020). Online teaching practices and the effectiveness of the educational process in the wake of the COVID-19 pandemic. *Amfiteatru Economic*, 22(55), 920–936.
 30. Trucano, M. (2016). SABER-ICT framework paper for policy analysis: Documenting national educational technology policies around the world and their evolution over time. World Bank.
 31. Unwin, T., Kleessen, B., Hollow, D., Williams, J. B., Oloo, L. M., Alwala, J., & Muianga, X. (2010). Digital learning management systems in Africa: Myths and realities. *Open Learning: The Journal of Open, Distance and e-Learning*, 25(1), 5–23.



32. Vaillant, D., Questa-Tortero, M., & Azpiroz, M. (2022). Re-considering teacher professional development in the pandemic era: The Uruguayan case. *International Journal for Research in Education*, 46(Special Issue 2), 167–201. <https://doi.org/10.36771/ijre.46.2.2022.167-201>
33. Williamson, B. (2017). *Big data in education: The digital future of learning, policy and practice*. Sage.