FACTORS INFLUENCING UPTAKE OF E-LEARNING AMONG STUDENTS AND HEALTH CARE PROVIDERS IN KMTC MAKUENI COUNTY

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ABSTRACT

Purpose: To factors influencing the uptake of e-learning among students and health care providers in KMTC Makueni County.

Methodology: The research adopted a descriptive cross-sectional design and was conducted across four KMTC campuses: Makindu, Mbuvo, Makueni, and Mbooni. With a combined student population of 3,323, a sample of 346 students and 20 healthcare providers was selected using Cochran's Sample Size Formula. Primary data was collected through structured questionnaires, and a pre-test was conducted at Machakos KMTC to ensure the validity and reliability of the instruments. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25 and then presented inform of tables graphs and charts.

Findings: The study found that individual factors—such as digital literacy and IT competence—had a significant positive influence ($\beta = 0.252$, $p = 0.024$), economic factors like affordability and resource access had an even stronger impact ($\beta = 0.470$, $p < 0.001$), and technological factors, including platform ease of use, also significantly boosted uptake ($\beta = 0.347$, $p = 0.011$). Institutional support showed a positive but statistically insignificant effect ($\beta = 0.002$, $p = 0.990$).

Unique contribution to theory, practice, and policy: Theoretically, the study refines the Technology Acceptance Model (TAM) by offering context-specific insights and identifying new factors influencing technology adoption. Practically, it informs targeted strategies to enhance e-learning at KMTCs, such as improving technical support, course content, and training for users. From a policy perspective, the study provides evidence-based recommendations to guide resource allocation and policy development, helping address equity and access issues and promoting a more inclusive and effective e-learning environment.

Keywords: E-Learning Uptake, Digital Literacy, Medical Education, Technological Factors, Economic Barriers, Individual Factors, Institutional Factors, Technological Factors.

INTRODUCTION

E-learning has become a vital mode of education, especially during global disruptions like the COVID-19 pandemic, which prompted a rapid shift to digital platforms worldwide. E-learning gained prominence as institutions worldwide sought alternatives to in-person instruction. The pandemic affected over 1.5 billion learners globally (UNESCO, 2020), prompting a massive shift to digital platforms. While adoption was already strong in developed regions, the pandemic accelerated its global use, revealing both its potential and significant challenges, particularly in under-resourced areas like Africa. In Kenya, institutions such as the Kenya Medical Training Colleges (KMTC) face persistent obstacles including poor internet access, limited devices, and insufficient training, despite supportive national policies (Hadullo, Oboko, & Omwenga, 2018). Most existing research focuses on universities, leaving a gap in understanding how medical training institutions, especially in rural counties like Makueni, are adapting. This study addresses that gap by exploring the specific factors affecting e-learning adoption in KMTC Makueni, aiming to guide more effective and inclusive implementation strategies.

LITERATURE REVIEW

The Technology Acceptance Model (TAM) focuses on how perceived usefulness, ease of use, and attitudes influence individual acceptance of e-learning (Davis, 1989). The Diffusion of Innovation (DOI) Theory highlights factors like compatibility, trialability, and institutional culture in technology uptake, while acknowledging limitations in organizational settings (Rogers, 2003). The Constructivist Learning Theory emphasizes active, social, and experiential learning, aligning with e-learning's interactive nature but facing challenges in rigid educational systems (Piaget & Vygotsky, 1983). Keller's ARCS Model explores motivation through relevance and confidence, noting that learning preferences and prior experience affect uptake (Keller, 1999). The Unified Theory of Acceptance and Use of Technology (UTAUT) identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as key factors in technology adoption (Venkatesh et al., 2003). Lastly, Social Cognitive Theory stresses the importance of self-efficacy, social modeling, and environmental support in learning behavior (Bandura, 1986). The uptake of e-learning is influenced by a range of individual, economic, institutional, and technological factors.

Individual Factors

Individual factors such as digital literacy, motivation, attitude, and IT competence play a significant role in determining how students interact with e-learning platforms. Studies show that students with higher digital literacy and IT skills perform better in online learning environments, although motivation and attitude alone may not significantly influence uptake (Puniatmaja et al., 2024; Kisanjara et al., 2019; Sharpe & Benfield, 2016).

Economic Factors

Economic factors like affordability, access to resources, and training costs are major barriers, particularly in African contexts where students struggle with high internet costs and lack of devices. Financial constraints also hinder institutions from investing adequately in e-learning infrastructure (Kisanjara & Maguya, 2024; Njihia et al., 2020; Tarus et al., 2015).

Institutional Factors

Institutional factors, including top management support, organizational culture, and clear e-learning strategies, are essential for successful implementation. Leadership backing and a culture of collaboration can significantly enhance e-learning readiness and effectiveness, though some institutional cultures can negatively impact adoption (Vowell, 2024; Mulhem & Wang, 2020, Neema-Abooki & Kitawi, 2017).

Technological Factors

Technological factors such as perceived ease of use, usefulness, and internet accessibility further affect uptake. When students find platforms easy to navigate and beneficial, their satisfaction and willingness to engage increase. However, in regions like Kenya, Nigeria, and Zimbabwe, unreliable internet, costly data, and insufficient digital infrastructure remain critical challenges. Collectively, these factors highlight the need for comprehensive and context-specific strategies to improve e-learning implementation and accessibility (Nuryakin et al., 2023; Gurban & Almogren, 2022; Nyemike et al., 2022).

RESEARCH METHODOLOGY

The study employed a descriptive cross-sectional design to assess factors influencing e-learning uptake among students and healthcare providers at KMTC campuses in Makueni County, Kenya. Conducted across four campuses Makindu, Mbuvo, Makueni, and Mbooni the research targeted 3,323 students and 20 healthcare providers, with a final sample of 366 participants selected through stratified and purposive sampling. Data were gathered using structured, close-ended questionnaires covering demographics, e-learning usage, and influencing factors. Analysis was performed using SPSS Version 25, with descriptive statistics, chi-square tests, and regression analysis applied to identify trends and significant associations, using a significance threshold of $p < 0.05$.

RESEARCH FINDINGS

The study achieved an 88% response rate, with 321 participants 301 students and 20 healthcare providers reflecting nearly equal gender distribution and broad age ranges. All four KMTC campuses were well represented, with Makindu having the highest participation. Most students were in their third year, while healthcare providers mostly had 1–5 years of experience. About 75% had consistent internet access, though disparities existed, especially in remote campuses. While 81% knew of the e-learning portal, only 65% actively used it, with digital literacy strongly linked to higher engagement. Economic barriers like data costs and device access hindered usage, particularly among low-income students. Institutional support was recognized but found to have

little measurable impact, whereas platform usability and mobile-friendliness significantly boosted e-learning adoption.

Table 1: The Respondents General Characteristics (Gender, Age, Campus, Year of training, time in the positions, internet access, awareness of the E-learning portal, Use of E-learning Portal and the E-learning Platforms Used).

Characteristics	**Category**	**Frequency**	**Percentage (%)**
Gender	Male	160	49.8%
	Female	161	50.2%
Age Bracket	< 20 Years	45	14%
	20–25 Years	223	70%
	26–30 Years	21	7%
	31–35 Years	2	1%
	36–40 Years	12	3%
	> 40 Years	18	5%
Campus	Mbooni	34	11%
	Makueni	109	34%
	Makindu	126	39%
	Mbuvo	52	16%
Year of Training (Students)	1st Year	5	2%
	2nd Year	98	32%
	3rd Year	153	51%
	4th Year	45	15%
Time in Position (Health Workers)	1–5 Years	17	85%
	6–10 Years	1	5%
	> 10 Years	2	10%
Have Internet Access	Yes	239	75%
	No	82	25%
Awareness of KMTC E-learning Portal	Yes	308	96%
	No	13	4%
Use of E-learning Portal	Yes	256	80%
	No	65	20%
E-learning Platforms Used	Google Class	256	66% (est.)
	Kenet Conferencing Class	92	-
	Zoom Class	106	-
	None	19	-

Factors Influencing Uptake of E-Learning

A simple linear regression model was applied to determine the strength and nature of the relationship between the independent variables and the uptake of e-learning.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782[a]	.611	.606	.52658

Source: Researcher (2025)

Table 2 reveals a very strong relationship between Economic Factors, Institutional Factors, Individual Factor, and Technological Factors and the uptake of E-learning among students at the KMTC in Makueni County. The high R Square value (.782) indicates that the four factors (Economic Factors, Institutional Factors, Individual Factors, and Technological Factors) explain a large proportion (78.2%) of the variability in the Uptake of E-learning. The adjusted R Square (.611) confirms that the model remains robust even when accounting for the number of predictors.

The Estimated Model

Regression coefficients were reviewed to examine the relationship between each independent variable and the uptake of e-learning at a 95% confidence level. The results are displayed in Table 3 below.

Table 3: Regression Analysis Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.362	.345		1.049	.298
	Individual Factors	.252	.109	.206	2.318	.024
	Economic Factors	.470	.109	.439	4.330	.000
	Institutional Factors	.002	.129	.002	.012	.990
	Technological Factors	.347	.133	.333	2.611	.011

Source: Researcher (2025)

The findings shown in Table 4.21 above reveal that individual factors positively and significantly influence the Uptake of E-learning at the KMTC in Makueni County (β=0.252, P=0.024). The findings also established that economic factors positively and significantly influenced the Uptake of E-learning at the KMTC in Makueni County (β=0.470, P=0.000). It was also established that institutional factors positively influenced the Uptake of E-learning at the KMTC in Makueni County, but the relationship is not significant (β=0.002, P=0.990). Technological factors were

established to positively and significantly influence the Uptake of E-learning at the KMTC in Makueni County (β=0.347, P=0.011).

The study established that for every unit increase in individual, economic, and technological factors, the uptake of e-learning at KMTC increases by 0.252, 0.470, and 0.347, respectively. However, institutional factors were found to have an almost negligible impact (0.002), which is not statistically significant.

RESEARCH DISCUSSIONS AND FINDINGS

The results are consistent with previous studies, such as those by Njihia et al. (2020), Tarus et al. (2015) and Kisanjara and Maguya (2024) found a positive and significant relationship between economic factors and the level of e-learning adoption. The findings are similar to those of Puniatmaja et al. (2024), Kisanjara et al. (2019), and Sharpe and Benfield (2016) who established that individual factors correlate with better learning outcomes in e-learning environments. A positive and significant relationship between institutional factors and the uptake of E-learning was similarly found by Mulhem and Wang (2020), Hosseini et al. (2018) and Neema-Abooki and Kitawi (2017). The findings align with those of Nuryakin et al. (2023), Gurban and Almogren (2022) and Nyemike et al. (2022), who found that technological factors are associated with improved learning outcomes in e-learning environments. This therefore indicates that there is a positive relationship between economic factors, institutional factors, individual factors, and technological factors and the Uptake of E-learning at the KMTC in Makueni County.

Conclusion

This study examined the factors influencing e-learning uptake among students and healthcare providers at KMTC campuses in Makueni County. The findings revealed that digital literacy, economic access, and technological usability significantly affect engagement, while institutional factors, though acknowledged, had limited practical influence. Notably, students with higher IT competence and access to affordable data and devices demonstrated greater platform usage. Usability of e-learning systems—especially mobile compatibility emerged as critical for consistent participation. These results highlight the importance of user-centered design and equitable access in enhancing digital learning outcomes in medical education.

Recommendations

KMTC should implement regular digital skills training for students and staff to build confidence and competence. Partner with ISPs and device providers to offer subsidized internet and tools for low-income learners. The institution should improve platform usability by focusing on mobile responsiveness and intuitive interfaces and also provide campus-level ICT support to help users navigate and resolve technical challenges. KMTC should also ensure active implementation of policies by translating institutional strategies into visible, actionable support.

REFERENCES

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Gurban, M. A., & Almogren, A. S. (2022). Students' Actual Use of E-Learning in Higher Education During the COVID-19 Pandemic. *Sage Open*, *12*(2).

Hadullo, K., Oboko, R., & Omwenga, E. (2018). Factors affecting asynchronous e-learning quality in developing countries: A qualitative study. *International Journal of Education and Development using Information and Communication Technology, 14*(1), 152–163.

Keller, J. M. (1987). Development and use of the ARCS model of motivational design. *Journal of Instructional Development, 10*(3), 2–10. https://doi.org/10.1007/BF02905780

Kisanjara, S., & Maguya, S. (2024). Student perceptions on e-learning implementation in Tanzania's Mzumbe University. *Journal of Education and Practice, 15*(1), 22–34.

KMTC. (2019). *Strategic Plan 2018–2023*. Kenya Medical Training College. https://kmtc.ac.ke/

Mulhem, H., & Wang, Y. (2020). Exploring organizational factors influencing students' satisfaction with online learning systems: A Saudi university case. *Education and Information Technologies, 25*(3), 2079–2097. https://doi.org/10.1007/s10639-019-10080-4

Neema-Abooki, P & Kitawi, A.K. (2017). Impact of E-Learning Strategy on Students' Academic Performance at Strathmore University, Kenya. *Makerere Journal of Higher Education,* 6(10).

Njihia, M., Mwaniki, E., Ireri, A., & Chege, F. (2020). Obstacles to successful uptake of open distance and E-Learning (ODEL) programmes: A case of Kenyatta University, Kenya. *African multidisciplinary journal of research*.

Nyemike Simeon, A., Abdulmujeeb Babatunde, A., Lukman Abiodun, N., Omogbadegun Olu, R., & Ido Emem, A. (2022). Uptake, Barriers, and Determinants of e-Learning Among University Students in Selected Low Income Countries in Sub-Saharan Africa Amidst the COVID-19 Disruption: An Online Survey. *Advances in medical education and practice*, *13*, 609–617.

Puniatmaja, G. A., Parwati, N. N., Tegeh, I. M., & Sudatha, I. G. W. (2024). The effect of e-learning and students' digital literacy towards their learning outcomes. *Pegem Journal of Education and Instruction*, *14*(1), 348-356.

Sharpe, R., & Benfield, G. (2016). The student experience of e-learning in higher education. *Brookes e Journal of Learning and Teaching*, *1*(3), 1-9.

UNESCO. (2020). *COVID-19 educational disruption and response*. UNESCO. UNESCO.https://en.unesco.org/covid19/education response

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.