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E-LEARNING AND PERFORMANCE OF PUBLIC UNIVERSITIES IN THE RIFT VALLEY REGION, KENYA

Fred Odhiambo[1], Dr. Alfred Bett, PhD[2]. Dr. Lydia Langat, PhD[3].
[1]*University of Kabianga*
[2]*University of Kabianga*
[3]*University of Kabianga*

ABSTRACT

The study explores the relationship between e-learning and the performance of public universities in Kenya's Rift Valley Region, focusing on how cloud computing supports e-learning as a cost-effective alternative to traditional education. Despite the potential of e-learning, challenges such as underutilized digital infrastructure and inconsistent adoption have impacted university performance. Grounded in the Technology Acceptance Model (TAM), the study employed a correlational research design, gathering primary data from 164 university employees. Reliability testing was conducted, yielding a Cronbach's alpha of 0.801, indicating high reliability of the measurement instruments. Hypothesis testing was conducted using Pearson correlation, revealing a statistically significant and strong positive relationship between e-learning and university performance, with e-learning accounting for 65.5% of the variation in performance. The study concludes that while e-learning significantly enhances university performance, its adoption is inconsistent, necessitating targeted efforts to fully leverage its benefits for educational outcomes in the region.

INTRODUCTION

E-learning systems are highly supported by cloud computing providing real-time lectures and improving the learning experience for students. The learning platform not only increases efficiency but reduces the cost for both the lecturers and students making it convenient than the traditional teaching and learning process (Kattoua, Al-Lozi, & Alrowwad, 2016). Higher learning institutions have incorporated web-based learning systems as well as learning management systems to improve the experience of the learner by incorporating real-time learning processes with access to learning resources.

E-learning is an education system that depends on electronic learning technology to teach and enable students to learn without the necessary physical classes. Technology has assisted learners in gaining new experiences as pointed out by Kattoua, Al-Lozi, and Alrowwad (2016). This has led to the development of comprehensive e-learning management systems that have been adopted based on usability, leadership, desired performance, institutional policies, enabling infrastructure and training assistance in Kenya (Maina & Nzuki, 2015). In Kuwait, there is numerous criticism of the adoption of e-learning due to poor utilization of resources and quality of education as pointed out by Alkharang (2014). Similarly, African developing nations have challenges with the internet infrastructure, inadequate resources, and low self-efficacy in distance learning were pointed out by Nyagorme (2015) in a comparative study between Kenya and Ghana. Perceived usefulness, cost, use and effectiveness affected students' adoption of social media integration in e-learning in Taiwan as stated by Peng and Hwang (2021). Similarly, Mehta, Morris, Swinnerton, and Homer (2019) focused on the value of e-learning adoption in the context of Gambian and British use of the VETA framework. Hence, the e-learning system has more benefit than cost in cost-benefit analysis (Al-Shargabi, Sabri, & Aljawarneh, 2021).

Performance is a multi-dimensional measure that is adopted in management based on the discipline. In the education sector performance has been measured in terms of academic performance as revealed by Sivathaasan and Velnampy (2013) who found that the utilization of e-resources impacts positively academic accomplishment among students. Public universities have demonstrated commendable performance in leveraging cloud computing to achieve cost reduction, expand online course offerings, enhance online resources, and increase online student registrations.

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Public Universities in Kenya are continuously adopting various cloud computing applications in various roles. In Kenya, universities have adopted Open and Distance e-learning (ODeL) as an e-learning platform (Nyagorme, 2015). Kenya's ambitious goals to expand access to education and enhance learning outcomes, the public universities in Kenya have begun to leverage cloud computing resources to address various challenges and improve performance.
As public universities in Kenya's Rift Valley region continue to embrace cloud computing technologies, they are poised to make significant strides in expanding access to quality education and driving innovation in higher education delivery. However, challenges like lack of support from top management, underdeveloped ICT infrastructure and management issues cloud computing resource adoption is still a challenge (Maina & Muthee, 2020). The private university counterparts are doing very well in adoption of the cloud computing resources which have contributed to higher performance.

Rift Valley Region which comprises Kericho, Narok, Nakuru, Bomet and Kajiado host numerous universities including Bomet University, Egerton University and Maasai Mara University among others. The study focused on the public universities based on similar structure and uniformity of E-learning resources adoption across the institution. Therefore, the study examined the relationship between E-learning and the performance of public universities in the Riftvalley region, Kenya.

STATEMENT OF THE PROBLEM

University education has become a necessity with an increase in literacy level in Society. The influx of students in universities has increased drastically leading to high student turnout in the university. This has led to an increase in constituent colleges, satellite campuses and a big population on main campuses. Universities have adopted E-learning which is expected to positively influence their performance. Despite the adoption of E-learning, universities still experience poor service delivery which affects their performance. Therefore, their performance can be associated with poor delivery of services, underutilization of existing digital infrastructure, and low research work and degree programmes in public universities. Previous studies have focused on modelling, and identifying challenges and solutions but few have focused E-learning and the performance of public universities. However, there was room to improve the quality and efficiency of service delivery mainly in public universities. It was on this basis that there was a need to investigate the relationship that exists between E-learning and the performance of public universities. Specifically, the study sought to bring out how e-learning relate to the performance of public universities in the Rift Valley Region, Kenya.

OBJECTIVE

To determine the relationship between e-learning and the performance of public universities in the Rift Valley Region, Kenya.

RESEARCH HYPOTHESIS

$H_0$1: There was no statistically significant relationship between e-learning and the performance of public universities in the Rift Valley Region, Kenya.

LITERATURE REVIEW

Theoretical Framework

The study is anchored on the Technological Acceptance Model (TAM) theory.

Technology Acceptance Model (TAM)

Davis proposed the technology acceptance model (TAM) in 1986. The theory proposes that organization acceptance behaviour affects the adoption of technology (Davis, 1989). Two factors affect the behaviour of acceptance of technology that is taken to be ease of use as well as considered usefulness which affect the attitude and behaviour of individuals in the organization adopting the technology. However, a successful acceptance decision always results in the adoption and successful use of the technologies.

E-learning resource adoption decisions in universities have been affected by the consideration of the usefulness at the same time the importance of ease of use by stakeholders, who include students, staff and businesses (Alkharang, 2014). Peng & Hwang (2021) assert that in Taiwan, e-learning adoption is affected by perceived usefulness, perceived effectiveness, self-efficacy, perceived cost, and perceived simplicity of use since they significantly influence students'

motivation to use the technology. This model acts as the main actor in the use and motivation of cloud computing in the usage and adoption by students accepting the adoption of E-learning.

In Kenya, Nyagorme (2015) pointed out that the use of e-learning among universities was affected by end-user, institutional factors, perceived e-learning features, and managerial factors. These factors are based on the perceived use of e-learning. This indicates that TAM is a significant model for the adoption of E-learning resources, explaining the adoption process and use of the technology among the stakeholders. successful implementation and integration of E-learning technologies based on TAM principles can contribute to enhancing university performance by improving resource accessibility, operational efficiency, and educational outcomes. Hence the need to relate E-learning resources and university performance in the Rift Valley Region.

Related Literature

E-learning systems as the utilisation of learning technology to improve students' performance and experience (Koh & Kan, 2021) . Where a good system should be able to take into account the environment, society, students, technology and culture to ensure viable quality output is produced. However, there are numerous impediments to adopting e-learning practices in Kenyan universities as per Maina and Nzuki (2015). Therefore, higher education institutions must take into account leadership, institutional policies, usability, desired performance, training assistance and enabling infrastructure to support E-learning.

According to Maina and Nzuki (2015) e-learning systems in Kenya and Ghana, it was clear that challenges of digital infrastructure, top management support and low efficiency have rocked the adoption and implementation of E-learning in higher learning institutions. In Taiwan, Social media platform was integrated into the e-learning system based on the concept of perceived ease of use, usefulness and efficiency as asserted by Peng and Hwang (2021). The VETA framework points to the valuable models where expectations, habits and price value are considered in adopting e-learning platforms (Mehta, Morris, Swinnerton, & Homer, 2019). Gambian and British employees are motivated to use e-learning (UTAUT2 basic model) which utilizes the VETA valuable model. E-learning systems require cost analysis based on high information system infrastructure that comes with adoption as stated by Al-Shargabi, Sabri, and Aljawarneh (2021). The e-learning system adopted in Jazan University comes with a good cost-benefit ratio which could be adopted in other universities across the Kingdom of Saudi Arabia.

Alkharang (2014) conducted an empirical investigation into the factors that influenced the adoption of e-learning in Kuwait. The purpose of assessing the challenges faced by the emergency of IT and its capability of enhancing knowledge access and e-learning has evolved as a requirement. Exploratory design was adopted to examine the situation of electronic learning in Kuwait and the main cause influencing the adoption. The study adopted the UTAUT theory. The results indicated that adoption and acceptance of e-learning are slowly picking up in higher learning institutions. It has enhanced the learning experience of the students, however, there are challenges of resources and cost of technology leading to criticism as the mode of the learning process. The current study was done in Kenya focusing on the adoption of e-learning and the performance of universities.

A comparative study was done by Nyagorme (2015) on e-learning adoption and implementation. This study aimed to determine the most significant obstacles to the adoption of e-learning at the Centre for Continuing Education (CCE), University of Cape Coast (UCC), Ghana, and the Open and Distance e-Learning (ODeL) Directorate of Kenyatta University (KU), Kenya. E-learning was examined on end-user, institutional factors, perceived e-learning features, and managerial factors variables. The study utilized Fishbein and Ajzen's Diffusion of Innovation theory and Theory of Reasoned Action. The descriptive survey approach was used to conduct the research. This study targeted the upper management of ODeL and CCE, as well as ITSS instructors and remote students. Using quota sampling, 10% of distance learners and 20% of teachers were selected correspondingly. The directors and IT support staff were chosen using a sampling method with a predetermined purpose. The data collection methods included a questionnaire and a guide for focus group discussions.

The results indicated that the adoption and utilization of e-learning at the universities of Cape Coast, Ghana, and Kenyatta University, Kenya, were insufficient. This was due to the negative lecturers' attitudes at KU, inadequate commitment from UCC's top management, the absence of internet networking, the relatively low self-efficacy of distance learners, the absence of a specific budget allocation for e-learning projects, and the general mismatch between

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the adopter categories of board members at both universities. The study conducted a comparative study between Ghana and Kenya-based e-learning adoption and implementation. The current study focused on e-learning adoption in relation to the performance of universities.

Maina and Nzuki (2015) examined the e-learning management system at Kenyan higher education institutions. Management systems for e-learning in colleges and universities This study examined the influence of social influence, effort expectancy, performance expectancy, and facilitating factors on the acceptability of e-learning management systems (EMS) in Kenyan institutions of higher education. A descriptive study approach, namely a cross-sectional design, was used to empirically evaluate the extent to which obstacles influence e-learning management system adoption (EMS). observations, face-to-face interviews, and Self-administered questionnaires were given to at least 600 instructors, students, administrators, and technical professionals from at least five universities in the Nairobi Metropolitan Area. To make conclusions about the correlations between the variables, inferential and descriptive statistics were utilized. Per the survey data, the majority of responders had less than three years of EMS experience. The study also showed that the training assistance, institutional policies, enabling infrastructures, desired performance, leadership, and usability of EMS affected its use in higher education institutions. However, the study did not relate to the performance of the universities to E-learning adoption but it examined the adoption of e-learning. The current study related e-learning to the performance of universities.

RESEARCH METHODOLOGY

This study adopted a correlational research design to establish the relationship between E-learning and the Performance of Public Universities in the Rift Valley Region, Kenya. Whereas cross-sectional research design was used to assist in obtaining data in a small time scope (Bryman & Bell,2015). This was appropriate since it obtained data based on the current state of E-learning as well as the relationship it has with the performance of the public universities in the Rift Valley Region.

The study used primary data collected using both online questionnaires and physical questionnaires administered to 164 employees comprising of Academic Heads (HODs and Deans), Administration Heads (Administrators and Directors) and Library and ICT Heads. The results of E-Learning and performance of universities was examined based on five-point Likert scale. The results indicated Cronbach alpha coefficient of 0.801 which was above the threshold of 0.7, hence the instrument was considered reliable. Data collected was screened before entering to SPSS version 23.0. The screened data was coded and entered into the analytical software for analysis and presentation purposes.

The study utilized inferential statistics where both simple linear regression was used to test for the relationship between E-learning and the performance of Public universities in the Rift Valley Region, Kenya.
A simple linear regression model was given as;

$y = \beta_0 + \beta_i x_i + \varepsilon$..... Model 1

Where;

Y	= Performance of Public Universities
β_0	= Constant Term
β_i	= Beta coefficients for i=1,2,3, respective variable
X_1	= E-learning

RESULTS AND DISCUSSION

Inferential Statistics

H_01: There was no statistically significant relationship between e-learning and the performance of public universities in the Rift Valley Region, Kenya.

The results were obtained from N=164 and is as follows,

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811[a]	.657	.655	.42927

a. Predictors: (Constant), E-Learning

Table 1 represents model 1 which indicated that there existed a strong positive relationship between e-learning and performance of organization (r=0.811). E-learning contributed 65.5% in variation of performance of organization while 34.5% was due to other factors (Adjusted R Square = 0.655).

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Table 2: ANOVA of Model 1

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	57.214	1	57.214	310.489	.000[b]
	Residual	29.852	162	.184		
	Total	87.066	163			

a. Dependent Variable: Performance of Organization

b. Predictors: (Constant), E-Learning

The results in Table 2 indicated that e-learning had a significant relationship with performance of organization (F=310.489, P=0.000<0.05).

Table 3: Coefficient of Model 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.310	.118		11.124	.000
	E-Learning	.652	.037	.811	17.621	.000

a. Dependent Variable: Performance of Organization

The model 1 was presented as follows;
$Y = 1.310 + 0.652X_1$
The revealed that a unit improve in e-learning (X_1) led to an increase of 65.2% in the performance of the organization (Y). The result further reveals that e-learning had a positive significant relationship with the performance of universities in Rift Valley region (β_1=0.652, P=0.000<0.05). The results revealed that the null hypothesis was rejected which led to acceptance of alternative. This implies that e-learning had a positive statistically significant relationship with performance of universities in Rift Valley region.

Kattoua, Al-Lozi, and Alrowwad (2016) argue that effective e-learning systems should consider multiple factors, including technology, culture, and environment, to enhance students' performance. This perspective is supported by the current study, which suggests that e-learning positively influences university performance, presumably by integrating these critical factors. Maina and Nzuki (2015) emphasized the importance of addressing these barriers to improve e-learning adoption. While their focus is on the challenges faced by Kenyan universities rather than the direct impact on performance, their findings underline the complexity of implementing e-learning systems effectively, a challenge that the current study acknowledges.

Al-Shargabi, Sabri, and Aljawarneh (2021) examined e-learning systems at Jazan University in Saudi Arabia and found a positive correlation between e-learning adoption and system success. However, current study's focus on university performance in Kenya reflects a similar concern with the effective adoption and integration of e-learning technologies to enhance educational outcomes.

In contrast, the study by Nyagorme (2015) presents a comparative analysis of e-learning adoption challenges in Ghana and Kenya, highlighting issues such as negative attitudes and inadequate infrastructure. While this study provides insight into the difficulties of e-learning implementation, it does not directly address the relationship between e-learning and university performance, which the current study aims to explore.

Alkharang (2014) and Mehta et al. (2019) provide additional context by discussing the broader implications of e-learning adoption and the role of values in influencing technology use. Both studies contribute to understanding the factors influencing e-learning adoption but do not specifically address its impact on academic performance, as the current study does.

SUMMARY

From this study, the results indicate that slightly more universities have developed web-based learning systems for student interaction, though there is considerable variation in their implementation. Similarly, the adoption of learning

management systems for teaching and learning is widespread but inconsistent across institutions. Many universities use web-based platforms to provide access to notes and course outlines, yet a notable number do not. The use of web-based applications for online lessons is common, but adoption rates differ significantly.

Fewer universities employ web-based assessment methods, showing high variability in their use. Online systems for tracking lessons and providing access to e-resources are not widely adopted, with significant differences in their implementation. Overall, e-learning positively and significantly impacts university performance in the Rift Valley region.

CONCLUSION

The study concluded that e-learning significantly enhances the performance of universities in the Rift Valley region. Despite some variations in the implementation of web-based learning systems, most universities have developed these systems to facilitate student interaction.

The widespread yet inconsistent adoption of learning management systems supports teaching and learning, providing access to notes and course outlines. The use of web-based applications for online lessons is common, but adoption rates vary significantly across institutions. Additionally, fewer universities employ web-based assessment methods, and the adoption of online systems for tracking lessons and providing e-resources is not widespread.

RECOMMENDATION

From the conclusion, the study recommended that universities in the Rift Valley region invest in the consistent implementation of web-based learning systems and learning management systems across all institutions. This includes standardizing the use of web-based platforms to provide access to notes, course outlines, and online assessment methods. Additionally, universities should focus on increasing the adoption of online systems for tracking lessons and providing e-resources, ensuring all students and faculty have equitable access to these resources.

Public universities should address the variability in the adoption rates and implementation quality to maximize the benefits of e-learning, leading to improved academic outcomes and overall performance.

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