

Original Article

ONLINE LEARNING AND IT FINANCIAL IMPLICATION ON EDUCATIONAL FOUNDATIONS UNDERGRADUATE STUDENTS OF SAINT AUGUSTINE'S UNIVERSITY TANZANIA (SAUT): THE COVID 19 EXPERIENCE

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Abstract

The objective of the study seeks to investigate the influence of online learning and its financial implication on educational foundation undergraduate students SAUT; the study adopted a mixed method approach which comprises qualitative and quantitative methods. The survey research design was used. The targeted population of the study comprised 6200 undergraduate students of the Department of Educational Foundation (SAUT). The sample of the study comprised 310 undergraduate students of the department of Educational Foundation which represents 5% of the total population. The instrument used for data collection was the questionnaire tagged "Online Learning and financial implication on educational foundations undergraduate students' questionnaire (OLFEUSQ)". The instrument was validated by experts in measurement and evaluation as well as educational foundation. The reliability of the students was carried out using Cronbach' Alpha method ranging from 0.72-0.85. Statistical tool used for data analysis was independent t-test (since the sub-variables were categorical). The findings of the study revealed that there was significance influence of accessibility of online resources and availability of online resources on financial implication of undergraduate students in the study area. In line with the findings of the study, it was recommended among others that there should be availability and efforts should be made by educationists and managements of higher institutions to provide adequate e-learning resources to aid learning; there should be availability and accessibility of online resources for undergraduate students of Department of Educational Foundation.

Keywords: Online Learning. Financial Implications, Educational Foundation, Undergraduate Students, E-Learning Resources

Introduction

Online learning emerged as the primary mode of education during the COVID-19 pandemic, offering a lifeline to continue education amidst the widespread school closures (UNESCO, 2020). Nwankpa, Okon, Ategwu and Udo (2024) opined that online resources are required for the actualization of students' learning because students are engaged in learning ICT to enable them to be productive in research. This unprecedented shift to digital platforms necessitated a rapid adaptation by institutions, educators, students, and policymakers, all of whom had to navigate new technologies and pedagogical methods to ensure educational continuity (OECD, 2021). While online education provided flexibility and expanded access to learning resources, it also presented substantial financial challenges for various stakeholders, including governments, educational institutions, and households (World Bank, 2021). Globally, the financial burden of online education has been shaped by a variety of factors such as economic conditions, digital infrastructure, and government policies. In high-income countries like the United States, Canada, and the United Kingdom, institutions were able to leverage advanced learning management systems (LMS) and well-established broadband connectivity to facilitate seamless transitions to online education (Brown, 2021; Garcia & Patel, 2023; Johnson et al., 2021). With already developed digital infrastructures in place, these countries experienced fewer barriers in the shift to e-learning. However, even in these high-income countries, the affordability of online learning remained a significant issue, with low-income students and households facing difficulties in securing the necessary digital devices and stable internet connections (Smith & Lee, 2022).

In contrast, low- and middle-income countries faced far more complex challenges due to high internet costs, inadequate access to digital devices, and limited institutional support for online learning (ITU, 2022). In Sub-Saharan Africa, for example, countries like

Nigeria, Kenya, and Tanzania experienced financial constraints that made the adoption of online learning difficult. In Nigeria, the reliance on mobile networks for education led to increased household expenditures on internet data, thereby disproportionately impacting low-income families (Olumorin & Adelakun, 2021). In Kenya, only 22% of students in rural areas had access to online education due to high data costs and insufficient ICT infrastructure, thus exacerbating educational inequalities (Ndiku et al., 2022).

West Africa also faced significant affordability challenges in adopting online education. For instance, in countries like Ghana and Senegal, many students struggled with the high costs of internet access and the lack of digital devices necessary for e-learning (Adjei et al., 2021). In Ghana, the financial strain was especially pronounced in rural communities where internet connectivity was scarce and expensive (Osei, 2023). These challenges were compounded by the lack of digital literacy skills among both students and teachers, which hindered the effective use of online learning platforms (Sama & Fagbamigbe, 2023).

In East Africa, countries such as Tanzania, Uganda, and Kenya encountered financial barriers that hindered the transition to online education. Also, in Tanzania, many students in rural areas faced challenges in accessing stable electricity and internet services, which rendered e-learning inaccessible for large segments of the population (Mtebe & Raphael, 2021). Similar challenges were observed in Uganda, where the lack of affordable internet and digital devices prevented students from fully participating in online education (Mutua & Mwangi, 2022). In Kenya, despite the government's efforts to provide online learning platforms, disparities in access to technology and high data costs continued to impede widespread adoption, particularly in rural and economically disadvantaged regions (Khan et al., 2023).

In Tanzania, the financial implications of online learning were particularly pronounced. A study by Mtebe and Raphael (2021) highlighted that students

in rural regions struggled with unreliable internet connectivity and a lack of digital devices. This issue was exacerbated by high data costs, which made it difficult for families to afford regular internet access for educational purposes. Similarly, the Ministry of Education, Science, and Technology reported that many Tanzanian schools lacked the necessary digital infrastructure to support online learning, leaving many students unable to participate in virtual classrooms (Mkunde, 2023). In addition, teachers faced challenges in adapting to digital pedagogy due to inadequate training and the high costs of acquiring digital tools and platforms (Lwoga, 2024). Moreover, the high cost of internet services, particularly in rural areas, meant that many students were excluded from the benefits of online education, further deepening existing inequalities in the education system (Mnyanyi & Bakari, 2023).

Statement of the Problem

Despite the increasing integration of online learning as a key component of modern education, financial constraints continue to pose a significant barrier to its widespread adoption and effectiveness. The COVID-19 pandemic accelerated the shift toward digital learning, highlighting both its potential and the underlying financial disparities that hinder equal access. While online learning has been successfully implemented in many developed nations due to well-established ICT infrastructure and government support, the situation is markedly different in developing countries, where financial limitations restrict access to the necessary tools and resources (Williams & Thompson, 2021; Odhiambo, 2023). Many educational institutions, particularly in low- and middle-income countries, face difficulties in funding the development and maintenance of digital infrastructure, including high-speed internet access, e-learning platforms, and computer laboratories. The financial burden of upgrading ICT facilities is often beyond the capacity of public schools and universities, leading to a significant digital divide between well-funded private institutions and under-

resourced public institutions (Chowdhury et al., 2022).

Furthermore, institutions that attempted to transition to online learning without sufficient financial investment often provided low-quality digital education, with frequent internet disruptions, outdated e-learning systems, and insufficient technical support. From a student's perspective, financial constraints manifest in the inability to afford essential digital devices such as laptops, tablets, and smartphones. This challenge is particularly acute among students from low-income backgrounds, who struggle to balance the cost of education with other basic needs. Even when students possess internet-enabled devices, the high cost of data and unreliable network connectivity further limits their ability to participate in online learning. In rural areas, where internet penetration remains low, students are often forced to travel long distances to access online resources, further increasing the financial strain on families. Additionally, the transition to online learning requires specialized training for teachers, which adds another financial burden on educational institutions. Many teachers lack prior experience with digital teaching methods and require extensive professional development to effectively deliver online lessons. Without proper training, teachers struggle to engage students effectively, leading to poor learning outcomes and decreased motivation among learners. Despite efforts by governments and international organizations to promote digital learning, financial barriers remain a persistent challenge that hinders progress toward equitable education. Addressing these issues requires a comprehensive analysis of the financial implications of online learning and the development of sustainable solutions, such as government subsidies, public-private partnerships, and innovative funding models. Without targeted interventions, financial constraints will continue to undermine the potential of online learning to bridge educational gaps and improve learning outcomes in developing regions.

Objectives of the study

The objective of the study seeks to investigate the influence of online learning and its financial implication on educational foundation undergraduate student of SAUT. Specifically, the study seek to find out the influence of:

1. Availability of online resources and financial implication on undergraduate student
2. Accessibility of online resources and financial implication on undergraduate student

Research hypothesis

The following null hypotheses were adopted to guide the study.

1. Availability of online resources does not significantly influence financial implication on undergraduate student
2. There is no significant influence of accessibility of online resources on financial implication on education foundation undergraduate student.

Literature review

In the United States, the COVID-19 pandemic led to a rapid surge in online learning, with significant investments made in digital education platforms, virtual classrooms, and remote teaching technologies. Many universities and K-12 institutions leveraged existing learning management systems (LMS) and video conferencing tools to ensure continuity in education (Brown, 2021; Garcia & Patel, 2023). However, financial inequalities remained a major concern, as students from low-income households struggled to afford laptops, tablets, and stable internet connections. Studies indicate that nearly 15% of U.S. households with school-age children lacked a high-speed internet connection, disproportionately affecting students of color and those in economically disadvantaged communities (Anderson & Vogels, 2020; Kim & Harper, 2022). Despite efforts by the government and private sector to bridge this gap through subsidies and device distribution programs, the digital divide persisted, hence limiting equal access to quality education. In European nations, governments played a crucial role in ensuring a

smooth transition to online learning by funding large-scale e-learning programs and subsidizing internet access for students. Countries like Germany, France, and the Netherlands implemented policies that provided free digital devices to students in need, while also expanding broadband infrastructure to rural and underserved areas (Müller & Schmidt, 2020; Lopez, 2022). The European Commission allocated substantial funds to support online learning initiatives, recognizing digital education as a long-term priority. However, despite these efforts, disparities in access remained, particularly among immigrant students, refugees, and children from low-income families (González & Silva, 2021; Becker & Johnson, 2023). Research highlights that while urban students benefited from well-funded digital education programs, their counterparts in rural and economically disadvantaged regions continued to face challenges in accessing high-quality online resources. When Mwamasso and Onyango (2020) looked at students' access to electronic resources in higher education, they found that students had to deal with issues such a lack of computers, energy, and network issues. It was also discovered that the majority of students lacked the technical skills and financial means to safeguard electronic devices, which prevented them from using computers to access stored electronic materials. Thus, it was determined that the majority of students at higher education institutions cannot access electronic resources because of inadequate infrastructure, a lack of computers, problems with electricity and networks, a lack of computer proficiency, and budgetary limitations. Owate (2018) also looked at undergraduate students' access to and use of e-learning resources in academic libraries: a precursor to academic objectives. The results demonstrated that there is, in fact, a connection between academic success and the availability and use of e-learning materials. Therefore, it was advised that educators and higher education administrators work to provide sufficient e-learning tools to support learning.

A study on the availability and accessibility of information resources in university libraries for students' academic use—a case study of pharmaceutical science—was carried out by Abubakar et al. (2020). The University of Jos students the results showed that while certain information resources are only partially accessible, the majority are available. Based on the results, it was also found that the respondents thought nearly all of the library's listed information resources were helpful. Therefore, it was suggested that the library maintain the information resources that are already available and accessible, and that additional information resources be obtained and made available to students due to their value to them. The high cost of internet services and restricted access to digital infrastructure, on the other hand, made it extremely difficult for West African nations to embrace online learning. The high cost of mobile data in many nations, including Ghana, Nigeria, and Senegal, inhibits students from successfully participating in distance learning (Adjei et al., 2021; Osei, 2023). According to a survey by Adjei et al. (2021), over 60% of Ghanaian students said they had trouble paying for enough internet bandwidth to take part in online courses.

Similarly, Osei (2023) highlighted that the cost of maintaining digital subscriptions for educational content was beyond the financial reach of most low-income families in Nigeria, where public funding for online education remained inadequate. Beyond affordability, the lack of stable internet connectivity and frequent power outages further complicated the implementation of digital learning in West Africa. Many rural schools lacked basic ICT infrastructure, leaving students without the necessary tools to access e-learning materials (Okafor & Mensah, 2022; Tchamasi, 2023). In response, some governments-initiated programs to provide subsidized internet access and digital devices to students, but these efforts were often insufficient to meet the demand. The digital divide between urban and rural learners widened, with students in major cities benefiting more from online learning opportunities than those in

remote areas (Agbo & Fofana, 2022; Adeyemi et al., 2024).

In East Africa, financial constraints significantly limited the adoption of online learning, as educational institutions struggled to invest in digital transformation. Countries such as Kenya, Uganda, and Rwanda made strides toward integrating technology in education, but the lack of adequate funding remained a major obstacle (Mutua & Mwangi, 2022; Ndulu, 2024). A study by Mutua and Mwangi (2022) found that in Kenya, only 35% of public schools had access to the necessary ICT infrastructure to support online learning, with most relying on traditional face-to-face instruction. The high cost of purchasing digital equipment, combined with limited government support, left many schools unable to transition effectively to remote learning. Moreover, students from low-income backgrounds in East Africa faced financial hardships that hindered their participation in digital education. In Uganda, for example, a significant number of students could not afford laptops or tablets, and many relied on shared or borrowed devices, which made continuous learning difficult (Mugisha & Tumwebaze, 2023; Wanjiru et al., 2024). The situation was even more severe in rural areas, where limited internet access and expensive data packages forced many students to abandon online learning altogether. Governments and private stakeholders attempted to bridge this gap through initiatives such as subsidized internet access and mobile-based learning platforms, but financial constraints continued to pose challenges for large-scale implementation (Kariuki & Muteshi, 2023; Omondi, 2024).

Tanzania encountered substantial financial setbacks in implementing online learning due to limited ICT resources and inadequate funding for digital education initiatives. The country's education sector, already burdened with resource constraints, struggled to support the transition to remote learning, particularly in public schools (Mkunde, 2023; Lwoga, 2024). A study by Mkunde (2023) found that only a small percentage of Tanzanian secondary schools had

access to functional computer laboratories, and most lacked high-speed internet connections. The reliance on traditional teaching methods made the shift to digital learning difficult, especially in rural areas where infrastructure remained underdeveloped. Additionally, many Tanzanian students from economically disadvantaged backgrounds found it difficult to afford digital learning tools. The high cost of mobile data and the scarcity of affordable smart devices limited student engagement in online education (Mnyanyi & Bakari, 2023; Komba, 2024). Lwoga (2024) noted that government funding for ICT in education was insufficient, with most investments directed toward urban schools, leaving rural learners marginalized. Efforts to introduce radio and television-based learning programs during the pandemic helped reach some students, but these solutions did not provide the interactive experience necessary for effective digital learning. As a result, educational disparities widened, with students in well-funded private schools benefiting more from digital education compared to those in under-resourced public schools (Ndunguru & Selemani, 2023; Rwehumbiza, 2024).

Methodology

The study adopted a mixed method approach which comprises qualitative and quantitative methods. The survey research design was used, and the design was appropriate for the study because it consists of a predetermined set of questions given to a selected number of pupils which can be used to describe the attitude of the population where the sample were drawn. The targeted population of the study comprise

6200 undergraduate students of the Department of Educational Foundation (SAUT). The sample of the study comprise 310 undergraduate students of the department of Educational Foundation which represents 5% of the total population. The instruments used for data collection was the questionnaire and interview, the questionnaire was tagged “Online Learning and financial implication on educational foundations undergraduate students questionnaire (OLFEUSQ)”. The instrument was validated by experts in measurement and evaluation as well as educational foundation. The reliability of the students was carried out using Cronbach’ Alpha method ranging from 0.72-0.85. Statistical tool used for data analysis was independent t-test (since the sub-variables were categorical).

Results

This section focused on the presentation, interpretation and discussion of the results that were obtained from the analysis of the data collected for the study. This was done hypothesis by hypothesis with each hypothesis tested at 0.05 level of significance.

Hypothesis one

Availability of online resources does not significantly influence financial implication of undergraduate students of the Department of Educational Foundation. Independent t- test analysis was employed to test data collected in respect to this hypothesis. This is because availability of online resources was measured categorically (as available and unavailable). The hypothesis was tested at 0.05 level of significant. The summary of result is as presented in table 1.

Table 1: Independent t-test analysis of influence of availability of online resources on financial implication of undergraduate students of the Department of Educational Foundation (N = 310)

Availability of online resources	N	(\bar{x})	SD	t-value
Available	190	53.43	1.34	6.51
Unavailable	120	39.35	1.26	

Significant at 0.05 level; D/F = 2 and 308; critical t-value of 1.968

The summary of results presented in Table 1 shows that the calculated t-value of 6.51 is greater than the tabulated t-value of 1.968 at 0.05 level of significance with 2 and 308 degrees of freedom. On this note, the null hypothesis

was rejected while the alternate hypothesis was upheld. This means that, availability of online resources significantly influences financial implication of undergraduate students in the study area.

Hypothesis two

There is no significance influence of accessibility of online resources on financial implication of undergraduate students of the Department of Educational Foundation. Independent t- test analysis was employed to test data collected in respect to this hypothesis. This is because accessibility of online resources was measured categorically (as accessible and inaccessible). The hypothesis was tested at 0.05 level of significant. The summary of result is as presented in table 2.

Table 2: Independent t-test analysis of accessibility of online resources on financial implication of undergraduate students of the Department of Educational Foundation (N = 310)

Accessibility of online resources	N	(\bar{x})	SD	t-value
Accessible	200	48.37	1.38	6.44
Inaccessible	110	38.75	1.26	

Significant at 0.05 level; D/F = 2 and 308; critical t-value of 1.968

The summary of results presented in Table 2 shows that the calculated t-value of 6.44 is greater than the tabulated t-value of 1.968 at 0.05 level of significance with 2 and 308 degrees of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was upheld. This means that, there was significance influence of accessibility of online resources on financial implication of undergraduate students in the study area.

Discussion of findings

According to the first hypothesis, undergraduate students in the Department of Educational Foundation's financial implications are not greatly impacted by the availability of online resources. Because the computed t-value derived from the data analysis was statistically higher than the crucial t-value, the alternative hypothesis was maintained and this null hypothesis was rejected. This finding implies that undergraduate students' financial implications in the study area are greatly influenced by the availability of online resources.

The results of the first hypothesis are consistent with the earlier findings of Abubakar et al. (2020), who studied the availability and accessibility of information resources in university libraries for academic use by students: a case study of University of Jos pharmaceutical science students. The study

found that the majority of the information resources were available, while some were only moderately accessible. Based on the results, it was also found that the respondents thought nearly all of the library's listed information resources were helpful. The results further support the assertion made by Osei (2023) that most low-income families in Nigeria, where governmental funding for online education is still insufficient, could not afford the expense of sustaining digital subscriptions for educational content. Beyond cost, the deployment of digital learning in West Africa was made more difficult by inconsistent internet access and frequent power outages.

According to the second hypothesis, undergraduate students in the Department of Educational Foundation's financial implications are not significantly impacted by the availability of online resources. However, this null hypothesis was disproved because the computed r-values derived from the data analysis were statistically higher than the crucial r-value. This finding suggests that undergraduate students' financial implications in the study area were significantly impacted by the availability of online resources.

The results of hypothesis two are consistent with the findings of Mwamasso and Onyango (2020), who

investigated students' access to electronic resources in higher education. The study found that students encountered difficulties in using electronic resources, including a lack of computers, electricity, and network issues. It was also discovered that the majority of students lacked the technical skills and financial means to safeguard electronic devices, which prevented them from using computers to access stored electronic materials. Thus, it was determined that the majority of students at higher education institutions cannot access electronic resources because of inadequate infrastructure, a lack of computers, problems with electricity and networks, a lack of computer proficiency, and budgetary limitations. The results also support the hypothesis of Owate (2018), who looks at undergraduate students' access to and use of e-learning materials in academic libraries as a prelude to academic objectives. The results demonstrated a connection between academic goal achievement and the availability and use of e-learning tools.

Conclusion

Based on the findings of this study, the following conclusions were made: there was significance influence of accessibility of online resources and availability of online resources on financial implication of undergraduate students in the study area.

Recommendations

In line with the finding of this study and conclusion made therein, the following recommendations were made: There should be availability and accessibility of online resources for undergraduate students of Department of Educational Foundation. Also, there should be platform to regulate the students' access to online resources; efforts should be made by educationists and managements of higher institutions to provide adequate e-learning resources to aid learning.

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