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Students experiences and motivational factors on using e-learning systems in higher education institutions in Tanzania

Mustapha Almasi, Fred Yaredi Mgata, Haruni Machumu and Agripina Masashua

Mzumbe University, P.O. Box 1, Mzumbe, Morogoro, Tanzania

Abstract. Using the e-learning system in teaching and learning is becoming normal in Tanzania's higher education. Higher education institutions (HEIs) strive to provide an appropriate environment for instructors and students to utilise the e-learning system effectively. This study explored the students' utilisation of the e-learning system and the motivational factors that influenced the utilisation. The study surveyed demographic differences in students' e-learning system utilisation among 730 undergraduate students who were randomly sampled from three campuses at a HEI in Tanzania. Data were analysed through descriptive statistics, independent t-tests and one-way ANOVA. The findings show that students were significantly motivated by an e-learning-supportive environment, lecturers' influences, and personal interests. Similarly, the e-learning system is highly utilised for uploading and downloading documents, but online learning activities could be more utilised. E-learning system utilisation was found to be average, and further measures should be taken to enhance the use of the e-learning system. Furthermore, the study found no significant difference in gender, though it was contrary to students in different years of study. With study years influencing the e-learning system utilisation, the study recommends intensive training on the use of the e-learning system in students' early years.

Keywords: e-learning, e-learning system, motivational factors, higher education institution, Tanzania

1. Introduction

The development of science and technology provides a vital channel for knowledge and skill sharing worldwide, particularly in the education sector. It has changed how teachers share content knowledge and skills and how students learn [11, 12]. Leveraging information and communications technologies (ICTs), such as the Internet, computers, artificial intelligence, smartphones, telephones, and e-learning platforms, a new pedagogical approach has emerged. This approach enables teachers to present learning materials in diverse formats and allows students to access educational content anytime and anywhere [3, 11]. Technology in education has significantly extended the teaching and learning process from face-to-face to using Learning Management Systems (LMS) such as the e-learning system [10].

The e-learning system is essential for teaching and learning activities in modern education scenarios [11]. It is a powerful instrument for knowledge transfer that supplements traditional teaching and learning techniques. Educational institutions, instructors, and students are increasingly adopting e-learning systems that allow instructors to deliver instruction interactively, share resources seamlessly, and facilitate

0000-0001-7154-0854 (M. Almasi); 0000-0001-7112-1246 (F. Y. Mgata); 0000-0002-5743-8906 (H. Machumu); 0009-0000-0221-4449 (A. Masashua)
amustapha@mzumbe.ac.tz (M. Almasi); frmgata@mzumbe.ac.tz (F. Y. Mgata); hmachumu@mzumbe.ac.tz (H. Machumu); agmasashua17@gmail.com (A. Masashua)

student collaboration and interaction [9, 10]. Likewise, the e-learning system can develop a strong bond between instructors and students, and among students, help students learn and use the e-learning material at their convenience time [31]. Also, it can allow teachers to extend their teaching beyond normal classroom settings [24] through texts, videos, online discussions, forums, and interactive visuals [2, 9, 10]. With an increasing number of students in educational institutions, the e-learning system modernises and enhances the learning process while increasing accessibility and convenience to students [40]. Thus, factors that influence students' utilisation of the e-learning system have to be effectively explored and analysed to develop proper mechanisms to enhance their utilisation.

2. Literature review

Worldwide, higher education institutions (HEI) have incorporated e-learning systems in the teaching and learning process. With the current demands of universities, which require the education of more students from a broader range of backgrounds and ages in different corners of the world, e-learning systems play an essential role. E-learning system enriches teaching and learning, increases access to education and training for students, and maintains a competitive advantage [2, 24]. Moreover, the study programs delivered face-to-face in a physical setting are still not exempt from using e-learning systems in module delivery, in which the delivery mode is termed blended learning [39].

Although the use of the e-learning system in different higher educational institutions has long been acknowledged, evidence shows that there are still continuous challenges in its implementation [9, 20]. Research shows that Western countries have done a lot to ensure the e-learning system is used effectively to support teaching and learning [17, 44]. The situation is opposite from the side of developing countries, particularly in Africa and some Asian countries, as most universities are still lagging despite significant efforts to catch up with those in developed nations [7, 16, 34]. Even though educational institutions in developing countries are integrating e-learning and creating an environment suitable for employing e-learning systems, some have yet to be used to the desired level to provide full experience to students [16, 27].

Further, studies show that the utilisation of e-learning systems differs among institutions and contexts, as some demonstrate poor utilisation compared to others with the influence of various factors [2, 5]. Studies by Almas, Machumu and Zhu [5] and Al Rawashdeh et al. [2] show that the e-learning system enables students to access course materials in digital format, share information, and improve learning through more significant interaction with instructors and other students via online discussion forums boards. Al Rawashdeh et al. [2] study demonstrates a favourable attitude toward using the e-learning system in assessing students, as online assessments include true-or-false, multiple-choice, open-ended, and short-answer questions found to be incorporated. Likewise, Feldman-Maggor, Tuvi-Arad and Blonder [15] study revealed that professors permitted students to submit their assignments via the e-learning platform.

On the other hand, utilising the e-learning system is still a challenge. For instance, a study by Mtebe [27] found that students complained about outdated educational materials, and some courses even needed more resources to cover all the topics and modules. Similarly, Liu and Yu [24] study calls for instructors to add more relevant learning resources to ensure effective integration with and within the system, which can influence students to use the e-learning system frequently. Students are not only influenced by the availability of relevant materials in the e-learning system but also by other factors ranging from intrinsic, extrinsic, and altruistic [33, 42, 48]. Factors such

as e-learning policy [43], e-learning infrastructure, information technology technical support, and training for instructors and students [7, 15, 31] affect the student's experiences on the use of e-learning system. Even though studies [14, 15, 19, 47] on factors that influence the use of e-learning systems among HEI have been conducted, the extent to which those factors influence the utilisation of the system has not been well studied especially in developing countries. This study surveys the extent to which HEI students utilise the e-learning system and the factors that influence the utilisation in Tanzania.

3. Statement of the research problem

Tanzania's higher education institutions have been developing ICT policies and upgrading teaching and learning infrastructures, including adopting e-learning systems to meet modern teaching and learning demands and attract more students. For instance, the University of Dar es Salaam (UDSM) vision 2061 indicates the need to harness the full potential of ICT to transform UDSM into an e-University in terms of IT infrastructure and services for excellent teaching and learning [41]. Similarly, Mzumbe University's quality assurance policy recognised the enhancement of the use of ICT in teaching and learning and adopted an e-learning system to support learning [30]. Despite the effort, higher learning institutions in Tanzania still face challenges in adopting the e-learning system, especially in influencing students' usage. As long as the e-learning system takes more than technology to embrace fully and successfully operate, factors including supporting personnel and supportive policy must be available [14, 47]. Similarly, students' and teachers' digital skills and access to resources such as classrooms, computer labs, and the Internet are vital in utilising the e-learning system [7, 37]. While acknowledging studies conducted to determine factors that motivate students' usage and utilisation of the e-learning system [4, 5, 14, 21, 26, 46], it is imperative to determine the degree of motivations of the various factors that influence student's actual usage of e-learning system for successful enhancing utilisation of the e-learning system in Tanzania higher education institutions.

Statistics show that an adequate number of studies have been conducted in Tanzania to determine the influencing factors for instructors and students to use the e-learning system and their experiences [4, 5, 23, 27]. However, looking into the degree of the influence of these factors is vital to understanding the specific contribution of these factors on students' utilisation of the e-learning system. An investigation into the degree of leverage can inform institutional learning leaders and teachers where the challenge is and to what extent appropriate measures can be taken to ensure the e-learning system is effectively utilised. To that end, this study explored the utilisation of the e-learning system and determined the extent of student motivational factors for e-learning system utilisation. Likewise, the study explored whether there is a significant demographic difference among groups of students who are utilising the system. The following are the research questions that guided the study:

i. What is the extent of students' motivational factors for utilisation of the e-learning system at a selected HEI in Tanzania?
ii. To what extent do the students utilise the e-learning system at a selected HEI in Tanzania?
iii. Are there significant demographic differences among students in utilising the e-learning system at a selected HEI in Tanzania?
    (a) H1: There are significant gender differences among students in utilising the e-learning system at a selected HEI in Tanzania.

(b) H2: There is a significant year of study difference among students in utilising the e-learning system at a selected HEI in Tanzania.

4. Research methodology

This study explored students' utilisation of the e-learning system and motivational factors for utilising the system in the Tanzania HEI context. A quantitative survey design was used to analyse the students' motivational factors for using the e-learning system and the extent of the system utilisation, as well as examine any demographic differences among the students. The quantitative approach allows for unearthing conclusive evidence rather than just providing information. A survey provides a numeric description of a population's trends, attitudes, or opinions by studying a sample. Hence, the study can make a claim or generalise about the population from the sample results. The representatives from three campuses of a selected HEI in Tanzania, which are the Main campus located in the Morogoro region, the Mbeya College campus located in the Mbeya region, and the Dar es Salaam College campus located in Dar es Salaam city, were involved in this study. The participants were randomly selected based on their willingness to complete the questionnaire from all years of study and programs in all faculties and schools.

4.1. Demographic information

A total sample of 730 sampled participants was involved in the study; 372 (51%) were male, and 358 (49%) were female. Of 730 respondents, 41.2% were first-year, 45.5% were second-year, and 13.1% were third-year students. Most respondents were aged 18-25 (65.2%), and the least were aged 41-50 (4.5%). Respondents from the main campus were 64.7%, from the Mbeya campus were 27%, and from the Dar es Salaam campus were 8.4%. The researchers tried to ensure proportional representation across campuses and years of study by stratifying the sample. However, since the surveys were primarily shared through online platforms, such insurance was not easily reached. As such, the more significant variation in the number of respondents between the campuses is influenced by related differences in the total number of students, as the main campus has more students than the Mbeya and Dar es Salaam campuses. However, it was challenging to control the respondents proportionately in years of study as the survey technique used is random sampling.

4.2. Instruments and data collection

The designed questionnaire comprised two sections: the first included demographic information such as age group, gender, campus, faculty or school, and year of study. Second, information that answered the research questions was subdivided into (1) motivational factors and (2) utilisation of the e-learning system, with 14 items in each subsection. For the motivational factors subsection, respondents were posed with a series of questions and responded to them using multiple choice by selecting "Yes" or "No". Furthermore, on e-learning system utilisation, a series of questions asked to respond using a Likert scale ranging from 1 to 4 were provided, where 1 = Never, 2 = Sometimes, 3 = Frequently, and 4 = Very frequently.

The validity and reliability of the instruments were ensured as two experienced researchers reviewed the questionnaire for clarity, accuracy, and content validity. Likewise, the pilot study was conducted, and Cronbach's alpha was used to determine the internal validity of the items. The values of 0.806 and 0.877 were obtained for motivational factors and e-learning system utilisation items, respectively. Given the study's exploratory nature, reliability values were deemed adequate as it was above 0.7 [35]. Furthermore, ethics were considered when permission was acquired before data collection. After getting approval, students who wished to participate in the study

Table 1
Respondents' demographic information.

Basis of classification	Classification	Count (%)
Gender	Male	372 (51.0)
	Female	358 (49.0)
Year of study	First	301 (41.2)
	Second	332 (45.5)
	Third	97 (13.3)
Campus	Main campus	472 (64.7)
	Mbeya campus	197 (27.0)
	Dar es Salaam campus	61 (8.4)
Faculty/School	Science and Technology	21 (2.9)
	Social Sciences	233 (31.9)
	Business	173 (23.7)
	Public Administration	150 (20.5)
	Law	153 (21.0)
Age group	18-25	476 (65.2)
	26-32	150 (20.5)
	33-40	71 (9.7)
	41-50	33 (4.5)

provided their oral consent and were ensured that their personal information would be kept confidential. However, since the questionnaire was meant to obtain responses on reports made by the respondent (reported data), this study acknowledges that such responses could be biased or created as the result of social desirability or recall bias. As such, the researchers framed some of the questions indirectly and admitted the questionnaire immediately after the end of the semester to avoid such biases.

4.3. Data analysis

Data collected were analysed using descriptive and inferential statistics. Descriptive statistics designate demographic information such as gender, age groups, campus, year of study, and faculties/schools. They were additionally employed to describe the students' motivational factors and utilisation of the e-learning system. In analysing the motivational factors, multiple responses analysis was used, and the summary showed 689 (94.4%) responded "Yes" to various items. In comparison, 41 (5.6%) responded "No" to all items, and the percentage of cases on each item, which describes the rate of several students who said "Yes" out of all, is shown in table 4. Moreover, quartiles were adopted to describe the analysis. The item (question) with a percentage of acceptance ("Yes") in influencing students' utilisation of e-learning within the 0 – 25% range is considered a low motivational factor. Above 25 – 50% is average, above 50 – 75% is high, and above 75 – 100% is very high. Table 2 shows the quartile intervals.

Table 2
Quartiles intervals on students' motivational factors.

S/N	Percentage (%) interval	Motivation level
1	0 – 25	Low
2	>25 – 50	Average
3	>50 – 75	High
4	>75 – 100	Very high

In describing the utilisation of the e-learning system, the averages and standard deviations were calculated for each item in the questionnaire. Moreover, category intervals of a 4-point Likert scale were calculated using the maximum and minimum values. The range (max score – min score = 4 – 1 = 3), then the category interval (Range/max. score = 3/4 = 0.75) calculated that resulted in four categorical intervals as shown in table 3.

Table 3
Average intervals on utilisation of the e-learning system.

S/N	Average interval	Utilisation level
1	1.0 – 1.75	Low
2	>1.75 – 2.5	Average
3	>2.5 – 3.25	High
4	>3.25 – 4.0	Very high

Likewise, inferential statistics, including the independent t-test and one-way ANOVA, were used to analyse the data that respond to a demographic difference's hypotheses. The independent t-test responds to the hypothesis, "There is a significant gender difference among students in utilisation of the e-learning system". One-way ANOVA was used to test the hypothesis, "There is a significant study year difference among students using the e-learning system".

5. Results

The study explored the students' motivational factors and experiences of using the e-learning system at an HEI in Tanzania. Specifically, it intended to identify the magnitude of motivational factors affecting students' use of the e-learning system, the extent of e-learning system utilisation, and whether there are students' demographic differences in utilisation of the e-learning system.

5.1. Students' motivational factors for using the e-learning system

The results showed that different factors motivate the students to use the e-learning system at different levels. Some factors are high, while others are lowly motivating the students. The findings showed that most students are highly motivated by a supportive environment (67.9%), course lecturers (62.3%), personal interest (62.0%), nature of the subject (59.8%), and university management (59.5%) which are highly ranked. Additionally, the computer laboratories available, guiding policy, and personal interest in using the system highly motivate the students. Contrariwise, online content and quality control mechanisms lowly motivate students with the most negligible percentage of 10.6% and 18.3%, respectively. Similarly, technical support (26.0%), training on using the e-learning system (36.0%), personal internet (40.8%), and reliable power (42.8%) averaged motivate students.

5.2. Students' utilisation of the e-learning system

The utilisation of the e-learning system was analysed, and the findings showed that students mostly used the system to download documents such as lecture notes and course outlines and receive assignments, as all reported, with high utilisation levels of 2.73, 2.57, and 2.52, respectively. Similarly, uploading assignments was among the top ways of utilising the system, with an average utilisation level of 2.28. Inversely, the online learning activities were found to be less conducted in the e-learning system as the results showed live lecture streaming, audio feedback, online tutorials, video upload, and online examinations are lowly utilised with an average of 1.27, 1.38, 1.43, 1.44, and 1.57, respectively. Moreover, checking grades (2.10), taking online tests

Table 4
Students' motivational factors for using the e-learning system.

Items descriptions	Responses		Percent of cases (rank)	Motivation level
	N	%		
University policy incorporating e-learning use	385	8.5%	55.9% (7)	High
Interests in using the e-learning system	382	8.5%	55.4% (8)	High
Management prescriptions on e-learning use	410	9.1%	59.5% (5)	High
The nature of the subjects included	412	9.1%	59.8% (4)	High
E-learning supportive environment	468	10.4%	67.9% (1)	High
Influence of the lecturers	429	9.5%	62.3% (2)	High
Computer laboratories available	392	8.7%	56.9% (6)	High
Reliable power sources	295	6.5%	42.8% (9)	Average
Training for e-learning system use	248	5.5%	36.0% (11)	Average
Personal computers	427	9.5%	62.0% (3)	High
E-content available in the e-learning system	73	1.6%	10.6% (14)	Low
Technical support on using the system	179	4.0%	26.0% (12)	Average
Quality control mechanism for e-learning use	126	2.8%	18.3% (13)	Low
Personal internet source	281	6.2%	40.8% (10)	Average
Total	4507	100.0%	654.1%	

Table 5
The e-learning system utilisation level.

Items descriptions	Mean	SD	Utilisation level
Downloading lecture notes	2.73	.925	High
Obtaining course outline (syllabus)	2.57	.948	High
Receiving assignments on the e-learning system	2.52	.856	High
Uploading assignments on the e-learning	2.28	.912	Average
Checking your grades on the system	2.10	.936	Average
Attending tests online	1.95	.831	Average
Obtaining tutor feedback through the system	1.95	.891	Average
Discussing/chatting online with fellow students	1.81	.857	Average
Having a consultation with an instructor online	1.79	.893	Average
Having examination(s) online	1.57	.819	Low
Uploading videos online	1.44	.816	Low
Attending tutorials online	1.43	.767	Low
Providing recorded audio feedback	1.38	.761	Low
Attending live lectures online (online streaming)	1.27	.616	Low
Total average	1.91		Average

(1.95), getting online feedback from tutors (1.95), and using discussion forums (1.81) were found to be the most used methods.

Despite the findings revealing the high utilisation of some components in the e-learning system, the total utilisation is not very high to ensure remote learning. The evidence of a total average of 1.91 shows the underutilisation of the e-learning system, which implies the e-learning system is generally average utilised by students. The levels of utilisation indicated in table 5 do not yet meet the standards set by the HEI studied. This is due to the fact that the visited institution aspires to offer courses in online and blended modes, which would require high levels of e-learning utilisation. Similar observations can be made about other HEIs in Tanzania, as indicated in the discussion section.

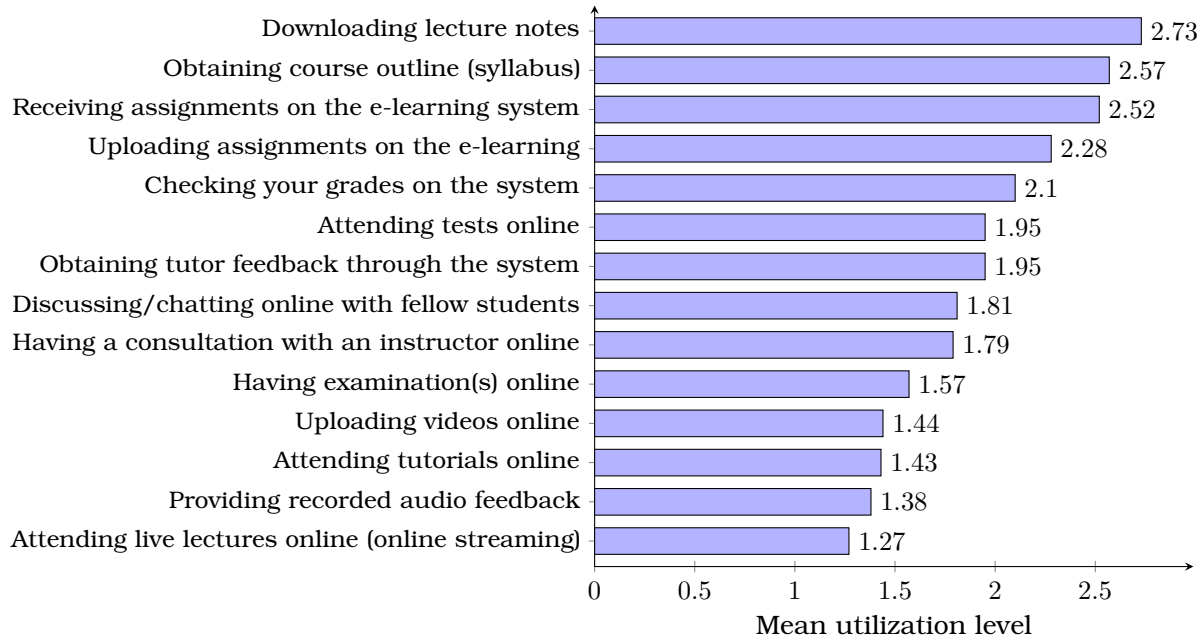

Figure 1: The e-learning system utilisation level.

5.3. Students' demographic differences in using the e-learning system

Moreover, the independent t-test was conducted to test hypothesis H1 regarding students' gender differences in utilising the e-learning system in learning activities. The results showed no significant mean difference between males and females in utilising the e-learning system. The findings revealed the male mean of M = 26.8522 and female mean of M = 26.7123 and observed that the e-learning system utilisation among male and female students is the same, $t(728) = 0.256$, $p = 0.798$. The results imply no worthwhile variation between the gender groups in utilising e-learning systems in their course learning activities.

Furthermore, the one-way ANOVA test was conducted to verify hypothesis H2 started if there is a difference in utilising the e-learning system among students from different years of study, such as the first, second, and third years. The e-learning utilisation average value for first-year students was 25.3854; for second-year students, it was 26.7470; and for the third year, students were 31.2474. The results showed a significant mean difference among the three groups of years of study in utilising the e-learning system, $F(2, 727) = 11.509$, $p = 0.000$. The post hoc tests were conducted while applying Tukey HSD multiple comparison tests to verify the significance of the difference between groups. The statistical mean difference was seen between the third year and first year ($p = 0.000$) as well as the third year and second year ($p = 0.000$), while no significant difference was seen between the first year and second year ($p = 0.057$). The results imply that third-year students use the e-learning system more than first-year and second-year students.

6. Discussion

The study explored the students' motivational factors and experiences of using the e-learning system in Tanzania's higher education institutions. It identified the magnitude of students' motivational factors for utilising the e-learning system, the extent of utilisation, and if there were any students' demographic differences. Based on the degree of motivational factors for students utilising the e-learning system, the findings indicate that a supportive environment, course lecturers, personal interest,

the nature of the subject, and university management highly motivate the students to utilise the e-learning system. The findings corresponded with the Zhang, Chen and Wang [46] study, which found that personal interest highly encourages students to utilise the e-learning system, even though Mutambik, Lee and Almuqrin [29] claimed personal interest is driven by other factors such as course instructors [36], e-learning policy [10], and university management [7, 31]. Students may be more likely to utilise the e-learning system if they have external drives. However, external drives may only work well with internal drives. Moreover, technical assistance [33, 39], training [21, 45], and online content quality [4] were found to be important by various studies, even though the current study was found to be insufficiently supportive. The online teaching and learning culture has not been well developed in Tanzania, as it is among the countries still lagging in technological transformation and adaptation. In that sense, HEIs must do much work to enhance online activities, especially to enhance instructors' and students' ability to interact with different components of the e-learning system. The call is influenced by the undesired overall level of motivations that can result in low utilisation of the e-learning system and underachievement of objectives of adopting the e-learning system in teaching and learning activities [27].

Regarding the extent of e-learning system usage, the findings revealed that students primarily used the e-learning system to download and upload documents, as opposed to other online activities. Activities such as downloading lecture notes and syllabi, receiving assignments, and uploading assignments were revealed to be the main activities conducted in the system. The results agreed with what Almas, Machumu and Zhu [5] found that the e-learning system lets students use digital versions of course materials. Lubuva, Ndibalema and Mbwambo [25] showed that most teachers let students turn in assignments through the e-learning platform. As Kisanga [21] said, online activities like seminar sessions and discussions allow students to keep talking about important learning topics and make more connections with each other. The study showed that live lecture streaming, online tutorials, online discussions, and online exams and tests needed to be more utilised. This concurred with findings from Al Rawashdeh et al. [2] that found few instructors used the online features in the e-learning system. Most features need to be utilised more, especially those related to online activities, which results in most students using the e-learning system just for document sharing. The average competence of the instructors in designing and executing online-based teaching and learning activities contributes to poor interaction with online features among students [5]. Therefore, the average utilisation level observed in this study seems to be consistently average when compared to similar HEIs in Tanzania. Overall, the utilisation levels of e-learning systems in Tanzania need to be boosted to improve learning, as reported in various cited studies.

On the side of demographic differences, which included the gender and year of study differences among the students utilising the e-learning system, the study findings showed no gender differences. However, there is a difference in terms of the year of study. In using the e-learning system for learning purposes, the findings showed that the level of e-learning system utilisation between males and females is the same, implying no worthwhile variation between the groups. The findings agreed with Eshun and Amofa [13], though it differs from Adams et al. [1], Aristovnik et al. [8], and Zhang, Chen and Wang [46] studies that found male students were more enthusiastic about accepting and using e-learning than female students. The difference in results can be attributed to Tanzanian children's low exposure to digital tools, as they mainly experienced them at the university level. Thus, since the course provision is formal and shared by all students in the class, it is more likely that both men and women will use it the same way than differently.

Conversely, based on the students' years of study, the study findings showed

a significant difference among first-year, second-year, and third-year students in utilising the e-learning system. Specifically, third-year students were found to utilise the e-learning system more than first-year and second-year students. This may be attributed to third-year students being more exposed to blended courses than their counterparts. However, the level of utilisation was found to be comparable in the first and second years. It implied that third-year students utilise the e-learning system more than first and second-year students. Ngoasong [32] supported the findings, as he claimed that students with little to no prior experience using ICT found it challenging to adapt to e-learning at the beginning. Similarly, Adams et al. [1] showed that postgraduate students are more motivated and utilise the e-learning system than undergraduate students. As a result, more experienced students find the system easier to use than less experienced students. This system should be in place to ensure that all students use it at a higher level. Strategies such as training first-year students during orientation might help equip them with the skills and knowledge to use the e-learning system effectively, as Johannsen et al. [18] claimed that the earlier the students begin using the e-learning system effectively, the better the learning outcomes.

While this study examines students' experiences and motivational factors in using e-learning systems in higher education institutions in Tanzania, the researchers acknowledge that socioeconomic influences could be at play. For instance, students' cultural perceptions of learning in general and e-learning in particular, as well as the attitudes towards traditional face-to-face learning versus online platforms, play a crucial role in adoption rates. This has been reported by various scholars, such as Almasi [6] and Semlambo, Sengati and Angalia [38]. Moreover, socioeconomic differences, including access to reliable Internet, affordability of digital devices, and variations in digital literacy, government policies, university support systems, and local technological infrastructure have also been reported as barriers that affect students in Tanzania [22, 28]. Meanwhile, the presence of an online and blended learning policy provided by the Tanzania Commission for Universities (TCU) in 2022 serves as a guiding policy.

7. Conclusion

Despite some elements being more highly motivating than others, the degree of motivation was found to be not at the desired level to influence students to utilise the e-learning system. The need for higher-level motivating factors is confirmed by the underutilisation of the e-learning system by the students as it is found that document downloading and uploading is the most activity conducted in the system while the critical expected use of the e-learning system, which involves online learning activities and seminars found to need to be less utilised. As Naveed and Ahmad [31] considered, the e-learning system is crucial for classroom instruction, independent study, and information acquisition; the study findings are alarming to policymakers, instructors, and educationists in Tanzania, who are looking for ways to enhance its use. Improvements to the infrastructure, implementation of e-learning policies, and training that can get students interested in using the e-learning system can be excellent places to start.

As the study findings revealed significant differences in utilising the e-learning system among years of study, the intensive training at the early stage (first year) seems sensible. Moreover, students need to be trained in digital skills and how to navigate online platforms, conduct themselves in online discussions, and utilise online assessment tools. Designing learning materials that accommodate students with disabilities (e.g., screen readers, captions) is also important. For educators, capacity

building on online content creation and course redesign to create well-designed blended courses are essential. Also, combining different ways to improve how students use the e-learning system can be a good idea, but developing a plan that works and can be used to enhance its use over time is essential. Thus, future research on developing mechanisms that can improve the utilisation of e-learning systems, especially in developing countries, can be worthwhile.

8. Study limitations and suggestions for further research

The study findings open the room for understanding the influence of various motivational factors on students' utilisation of e-learning systems in higher education institutions in Tanzania. While the study has several strengths and contributions in practising blended learning, the limitations and areas for further studies have also been addressed. However, the quantitative method was employed as the study was conducted in a developing country (Tanzania) with underdeveloped technology. The differences in technological development across countries limit the generalizability of the findings across populations. Likewise, the data collected through the questionnaire is self-reported, which has the potential for bias that can influence the study findings. With the potential for bias, the self-reported data may not always be objective. Moreover, the participants were randomly selected based on their willingness to complete the questionnaire from all years of study and programs in all faculties and schools. In the process, the proportionality representation across campuses and years of study was not ensured, which might distort the findings; thus, future studies can be conducted while ensuring the proportionality of representations across various essential variables. As the study employed a purely quantitative method, additional descriptive information through a qualitative research method might add critical knowledge to the research report. Finally, a further study on the model and approaches for blended learning in developing countries can offer more insights into the best way of utilising the e-learning system.

9. Recommendations

The study's findings influence some recommendations for improving the utilisation of e-learning systems in HEIs. The low engagement with online interactive tools could be improved by extending the university network (Wi-Fi) service to students' dormitories, where they spend most of their time after classroom sessions. In that way, the chance for the students to utilise the e-learning system by engaging in forums, discussions, and online sessions outside of the classrooms can be expanded. Likewise, frequent training on integrating into different key components of the e-learning system can improve online content quality and the utilisation of the system. Moreover, early-stage training would be valuable in ensuring the ability of first-year and second-year students to interact with the e-learning system.

Declaration on generative AI: The authors declare that they have not used AI tools in the writing of this article.

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