



International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Learning Management System and Academic Optimism among Online Postgraduate Students at Kenyatta University

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DOI : <https://doi.org/10.55248/gengpi.6.0625.2360>

ABSTRACT

The study sought to establish learning management system effects on the performance of online postgraduates at Kenyatta University, Kenya. The problem is that the traditional model of the classroom is being dismantled but the effect of the LMS on the performance of online postgraduate students is not yet substantiated. The study objectives are to find out the effect of learning management systems on academic optimism at Kenyatta University. The LMS is the independent variable while the performance indicator: academic optimism is the dependent variable. A mixed method of survey and a phenomenological research design were used. The data collection instrument was a questionnaire. The study used convenient volunteer sampling. Data was analyzed using thematic and statistical analysis including descriptive and inferential analysis. The findings showed that the LMS also provides an option for the learners to access learning materials from anywhere they are which promotes self-paced learning. The LMS, therefore, is a vital system in postgraduate faculties at KU. The findings showed that the features of LMSs enhance students' experiences while learning which increases their motivation for studies. The ability to access all the learning materials conveniently and with no physical restrictions contributes to an uninterrupted learning experience for postgraduate students at KU. The number of dropouts is reduced among postgraduate students when LMS is used due to the students' ability to access learning material from anywhere without time restrictions. Recommendations include that all higher learning institutions in Kenya integrate a LMS to provide alternative and flexible learning modes to their postgraduate students, that KU designs an orientation video and session to be run every beginning of a semester to equip both enrolled and aspiring KU postgraduate students with the necessary skills of using Kusoma LMS. that KU develops an offline version of the Kusoma LMS which will be accessible to all students using different devices without internet access.

Background to the Study

The systematic process of acquiring new knowledge in various forms constitutes education which is important in facilitating interactions and transactions (Rashid & Sara, 2023). Skills gained through education are also important for application in other economic and social areas. Every country strives to provide the best education for its citizens. The world is dynamic and the field of technology keeps evolving. Consequently, the education sector is also experiencing dynamic changes by incorporating technology which can affect academic motivation and completion rates. The Learning Management Systems (LMS) increase the convenience in content delivery, and education access for students (Al Rawashdehet *et al.*, 2021). The traditional formal education system entails the students and teachers interacting in a classroom setting, but following the advancements in technology and internet access, many classrooms are virtual, facilitated through the LMS.

A Learning Management System organises courses and provides a suitable graphical interface for students to learn, interact with their peers, and earn certifications remotely (Turnbull, Chugh, & Luck, 2021). Andersson (2019), defines the LMS as an information system that is used in educational efforts. Anderson emphasizes the LMS facilitates learning by providing access to the course content, making it possible to be on schedule despite a student's physical location irrespective of where the institution is based. Likewise, Binaret *et al.*, 2022 describe LMS as a media tool that enables learning to occur on a large scale. Noting technology as an essential learning tool for delivering education in the now widely altered sector in the 21st century, Binaret *et al.*, 2022 sees the LMS as a promising tool that will enhance collaboration between teachers and learners and ease the process and integrity of conducting assessments and receiving feedback from tutors.

The adoption of LMS has grown significantly and the level of acceptance is rising. The LMS provides a user-friendly interface, managing all information between the learner and the tutors and accommodates the perspectives of the administration which makes it a complex system. The structure and functioning of the LMS differ based on the complexity and integration levels accommodated. According to Utomo and Alawiyah (2022), in the North American region,

over 85% of the learning institutions have adopted the LMS, in Europe the proportion of learning institutions that have adopted the LMS as of 2021 was 78%. In other regions such as Asia, the adoption of LMS is at 34% of the learning institutions (Utomo & Alawiyah, 2022).

In the African region, the LMS is defined in varied ways. Tonukari and Hod (2021), explain the LMS as a web-based education platform mediating the interactions between learners and teachers. Mtebe (2020), notes that the LMS is referred to as 'e-learning' and that it improves the quality of both studying and teaching. The appreciation and acceptance of the LMS is at a slow start in Africa and only a limited number of universities have adopted the system. However, when the LMS is adopted it is faced with a myriad of challenges. Most universities with LMS in Africa, according to Kiketa, *et al.* (2022), are those that are foreign-owned and or partially sponsored by a foreign body. Otherwise, many African Universities cannot acquire and facilitate learning through LMS due to financial incapacity (Kiketa *et al.*, 2022). Nonetheless, the universities that have implemented the LMS have also.

According to Bouchrika (2024), the annual growth rate for LMSs in Africa is 15.2% but during the Covid-19 period, there was an acceleration of digital learning which raised the number of institutions adopting the LMS to about 21%. The adoption of the LMS is more pronounced in African countries with internet access. About 60% of the countries in Africa have less than 50% of their citizens using reliable internet (Bouchrika, 2024). The cumulative effect of slow internet connectivity is that the learning institutions in Africa are limited by capacity and cannot adopt digital learning in those regions. Yakubu, Dasuki, Abubakar, and Kah (2020), also established that the majority of Africans using the internet are not fully adapted to technology and do not explore its full potential, further dwindling their interest in digital learning.

According to Mhlanga, Denhere, and Moloi (2022), e-learning in South African schools increased tremendously during the COVID-19 period, cementing acceptance and the use of digital tools in the education sector. Prinsloo and Kaliisa (2022), note that there is a great improvement in the provision of learning with how it is facilitated by the teachers or how it is perceived by the learners when the LMS is used despite the poor development of the LMSs in many African Universities. Notably, Kiketa, *et al.*, (2022) see poverty as detrimental to online learning. Many countries in Africa are affected by high poverty rates and rely heavily on face-to-face learning. In such circumstances, the schools still register low accessibility and completion rates.

Kenyatta University (KU) is among the pioneer institutions for online learning using the LMS in Kenya. The digital school has been operational since 2014. The use of the LMS is a major milestone in enabling virtual learning within the institution (Mwaniki *et al.*, 2020). The KU LMS is referred to as *Kusoma* which has the learner and tutor interfaces integrated. *Kusoma* is the classroom from which the students operate. The students access the notes, quizzes, and discussion forums from *Kusoma*. Ideally, the whole course including examinations can be administered via the LMS but the institution calls for the students to appear physically on any of its campuses for their Continuous Assessment Tests (CATs) and the end-of-semester exams. *Kusoma* also fosters communication between the teachers, students, and the administration who are the primary stakeholders in online learning at KU.

Statement of the Problem

The adoption of digital learning intensified during the COVID-19 pandemic following the restrictions that were imposed to prevent the spread of the virus. According to Yao *et al.* (2020), the rate of growth was 85% globally. Institutions that adopted digital learning also ended up making it part of their learning system with the establishment of digital schools increasing substantially (Utomo & Alawiyah, 2022). Digital learning is a growing reality with more institutions including Kenyatta University utilizing it as a mode of study. The specific problem statement is that the traditional model of the classroom is being dismantled but the effect of the LMS on the performance of online postgraduate students at Kenyatta University is not yet substantiated.

Justification of the Study

Investing in LMSs is a common practice with the growing demand for digital learning worldwide. The LMS provides an interactive interface between the tutor and the students. The LMS is like a to-go classroom full of resources that can be accessed around the clock by students. Any investment is considered feasible when it realizes some returns. The current research is therefore relevant in revealing the returns that are obtained from the high investment in the LMS by KU. The study was conducted at Kenyatta University since it is one of the institutions that were pioneers in the adoption of the LMS in Kenya since 2014. There was a need to evaluate the relevance of the LMS in education for the institution. This study, therefore, was necessary to establish whether the investment in LMS is an effective approach to learning by investigating how the integration of LMS in education affects postgraduate students' performance. The study focused on postgraduate online students because a majority of them have experienced the traditional mode of study during their undergraduate studies, making the postgraduate online students ideal for conducting a substantial study.

Empirical Review

Learning Management Systems

Darko (2021), evaluated how the use of the blackboard influenced the student's performance. The research was underpinned by the social learning theory. The study was quantitative and employed a correlational design. The population was all postgraduate engineering students. Through random sampling, 417 postgraduates were participants. To collect data, a questionnaire was used. The data was analyzed using the Pearson correlation analysis method. The study

established a positive linear correlation between the time spent on the blackboard and the student's performance. The study also found that the students with the ease of using the blackboard had a better performance. The study creates a contextual and methodology gap where it focuses on studying the performance of the students based on the use of LMS using a quantitative study. The current study will use a mixed study design and will be conducted in Kenya.

Razali *et al.* (2022) investigated the effects of learning accessibility as a mediator of learning styles and blended learning in higher education institutions during the COVID-19 pandemic. The study was conducted at Putra University in Malaysia. The study design was a quantitative survey design. The target population was all students who have enrolled in the LMS learning system within the University and the sample used for the study was 208 students whose responses were randomly selected. The findings of the study showed that there is a strong correlation between the ease of accessibility of the LMS program and the performance of the students in the higher education system. The study reveals a theoretical, methodology and a contextual gap. In the methodology gap it focuses on the quantitative approach while the current study focuses on a mixed research method. In the contextual gap, it focuses on Putra University while the current study focuses on Kenyatta University, the study does not have a theoretical underpinning while this current one utilises self-deterministic and technology acceptance model theories.

Alshira'h, Al-Omari, and Igried (2021) studied usability evaluation of learning management systems (LMS) based on user experience. The study was conducted in Jordan guided by the constructivism theory and utilized a quantitative survey design targeting the entire population of students in the university. The sample size for the study was 316 students selected through a simple random sampling technique. The data was collected using a structured questionnaire and analyzed statistically. The findings of the study showed that there was a statistically significant difference between the groups that utilized the LMS and those that did not use the LMS. There is however a methodology and a contextual gap in this study. The contextual gap is that the current study focuses on Kenyatta University while this study focuses on Jordan. The methodology gap is that the study uses a quantitative study while the current study uses mixed research methods.

Learning Management Systems and Academic Optimism

Daaret *et al.* (2023) investigated the students' perception of LMS learning in Indonesia during the COVID-19 pandemic, in a qualitative case study design. The target population was the students undertaking the courses at Indonesia University and the sample comprised 25 participants selected using a purposive sampling method. Data was collected using a semi-structured interview and analyzed using thematic analysis. The findings showed the use of the LMS motivated students to complete their course through an improved experience. The reviewed literature presents a theoretical, methodological, and contextual gap. The study is qualitative and is applied within the context of an Indonesian university. The current study however focuses on Kenyatta University in Kenya and is underpinned by two theories: self-deterministic and technology acceptance model theories.

Wang, Wu, and Chen (2024) investigated the effects of blended learning with the LMS program. The study was guided by the technology-mediated learning theory. It employed a quantitative design and used a sample of 400 participants selected at random using the CART algorithm strategy. Analysis was done through regression analysis and ANOVA. The findings of the study showed that the use of the LMS improved the student's learning experience and boosted their performance. The study contains a conceptual and methodological gap in that it employs a quantitative design and tests the effects of blended learning on LMS programs while the current study uses a mixed research method and focuses on the effect of LMS among postgraduate performance students in Kenyatta University.

Ajjola (2021) researched the attitude of distance learners towards the utilization of the LMS taking a case study of the National Open University of Nigeria. The study used a quantitative survey design. The target population was the students of National Open University of Nigeria and a sample of 697 participants was selected using a simple random sampling. Data was collected using a structured questionnaire and analyzed using the ANOVA method. The findings showed that there were statistically significant differences in the attitude of students towards the implementation of LMS learning based on gender. There was no theory in the study while this current research utilizes self-deterministic and technology acceptance model theories. The study has a conceptual gap, a methodological gap, and a contextual gap. The conceptual gap is realized where the study focused on learners' attitudes while the current study focuses on the effect of LMS on the performance of postgraduate students. The method used is quantitative while the current research uses mixed methods. The context for the study is Nigeria while that of the current study is Kenyatta University

Theoretical Framework

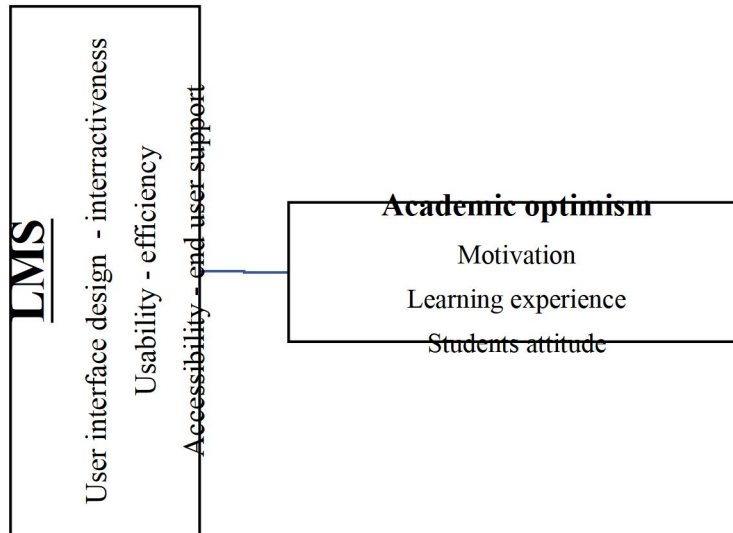
Self-Deterministic Theory

The proponents of this theory include Edward L. Deci and Richard M. Ryan who discovered that human behaviour is characterized by the need to achieve personal goals and therefore the level of motivation tends to come from within the individual and is not influenced by external factors (Sheldon & Goffredi, 2021). While learning can be seen to be promoted by the tutor, the tutor only engages in the aspect of providing the necessary resources to the learner to allow them to achieve their goals. The learning process is intrinsically motivated by the learners themselves depending on their need for development and growth.

The LMS introduces the concept of learning that is largely controlled by the learner. The learner can decide to log in and review resources or not, or even to attend or not to attend virtual lessons at a whim. In essence, it is possible for the student to get away with their decisions by crafting good enough

explanations pertaining to their actions or inactions. Therefore, the academic optimism, course completion, and teacher-student contact duration for a learner are heavily reliant on their intrinsic motivation. The learner can use the resources provided in the LMS to create their personal goals and organize themselves and the strategies they will use to achieve set academic goals. The high level of freedom of operation and engagement can be used to self-pace and study at the optimum level for a great student, maximizing the duration for the teacher-student contact and completing their registered course on time

Conceptual Framework



Methodology

The study employed mixed method design so as to obtain both the statistical explanation of the effect of LMS on the performance of the students and also have a description of the non-numerical aspects that are relevant to the relationship between the LMS and the academic optimism of postgraduate online students at Kenyatta University. The study targeted 4,529 students distributed among 5 Schools/Faculties that offer online classes. Using Krejcie and Morgan model (1970), the sample size was determined to be 354 while the sampling was done using stratified sampling to classify them under their appropriate school/faculty, the convenience sampling from each stratum. The primary data was collected using a questionnaire which was piloted among the Continuing Education Programme (CEP) students to test for reliability and validity. Data analysis was done using both descriptive statistics (mean and standard deviation) and inferential statistics (regression, correlation, ANOVA and Fisher's test).

Results and Discussions

The response rate was higher than the respondents (105%) since the study distributed more questionnaires than the sample size to cater for non-responses and incomplete responses.

Demographics

On the year of study, the majority of the students, 152 (41%) were doing their master's thesis, 81 (21%) were in their year 2 semester 2, 26.1% were in their Year 1 Semester 1 while 10.9% were in their year 1 semester 2. Most of the respondents (210) were female while the remaining 153 or 41% were male. The age distribution showed that 16% respondents were aged 18-25 years, 36% were aged 26-35, 31% were aged 36-45 and the remaining 18% were aged between 46 and 55. More than half of the respondents (51%) were domiciled in the School of Law, Arts and Social Sciences, 2.4% were from the School of Agriculture and Environmental Studies (SAES), 29.1% were in the School of Business Economics and Tourism (SOBET), while the remaining 9.4% were in the School of Education and Lifelong Studies (SELL)

Learning Management System

The study sought to establish different aspects relating to the use of LMS, including the frequency of use, ease of navigation, whether LMS performs its intended function, ease of use of LMS, how LMS enhances the quality of learning, accessibility on multiple devices and how LMS affects postgraduate learning. The findings are as reported below:

On average, the participants used the LMS weekly (Mean, 0.6951, Standard deviation (SD), 0.62342, mode 2). According to Strakos *et al.* (2023), the courses in most LMSs are organized based on weeks, hence the high likelihood that individuals have to log in weekly. Most participants, 198 (53.5%), used LMS weekly, followed by daily, 144(39%). Those who used monthly were 27(7%) while those who used another frequency were least 9(0.5%). This aligns with those of another research by Strakos *et al.*, who established that the courses in LMSs are organized in weeks, hence students must access the LMS at least once a week. This is followed by those who use the LMS every day, which can be explained by the study of Al-Ataby (2021), who notes that students undertaking intensive courses are likely to use the LMS daily due to the complexity of the course.

Overall, the participants agreed it's easy to navigate Kusoma LMS (mean 4.14, Standard deviation 0.77). These results agree with the works of Darko (2021), who opined that students with ease of using the blackboard had a better performance. Meaning the students find it easy to navigate the LMS, hence boosting their experience of learning using the LMS. The majority of the participants, 186 (49.9%), agreed it's easy to navigate Kusoma, while 125 (33.4%) strongly agreed. Participants neutral to the matter were 14.6%, while an equal number, 4(1%), disagreed and strongly disagreed. These results align with the findings of Darko (2021), who established that an LMS interface with great features on the dashboard complements students' study experiences.

On average the participants ranged from neutral to agree that LMS perform intended functions (mean 3.7649, standard deviation 0.647). The findings agree with those of Darko (2021) who also established that the LMS is equipped with features such as the dashboard which facilitates navigation and access to the learning materials that improve the learning experiences of the users. Most participants 220 (59%) agree that LMS perform the intended function followed by those who were neutral 108 (29.1%). The members who strongly agreed were 36 (9.7%) while negligible proportions strongly disagreed 1 (0.3%) and disagreed 6 (1.6%). The findings support those of Rizal *et al.* (2022) who also found that there is a strong positive relationship between the ease of accessibility of the LMS program and the performance of the students in the higher education system. This means that introduction of the LMS-based learning improves the learning process of the students as established in this study.

The participants agreed that LMS features are easy to use (Mean 3.89, Standard deviation 0.75399). The findings align with those of another study by Rizal *et al.* (2022), who opine that there is a strong correlation between the ease of accessibility of the LMS program and the performance of the students in the higher education system. Majority of the participants 190 (51.21%) agreed LMS features are easy to use while 76 (20.22%) participants strongly agreed. Individuals who were neutral 96 (25.88%) while only 9(2.4%) disagreed and 1 (0.27%) strongly disagreed. The results contribute to those of another study by Rizal *et al.* (2022) who established the existence of a strong positive relationship between the ease of accessibility of the LMS program and the performance of the students in the higher education system.

On average the participants agreed LMS enhances quality of learning (mean 4.1034 standard deviation 0.67499). The results are supported by those of Rizal *et al.* (2022) who opine that there is a strong correlation between the ease of accessibility of the LMS program and the performance of the students in the higher education system. The findings also align with those of another study by Al Shirah, Al-Omari, and Igried (2021) who also report that the difference between the groups that utilized the LMS and those that did not use the LMS was statistically significant. Those who utilize the LMS perform better. Most participants 213 (57.4%) agreed LMS enhances quality of learning followed by those who strongly agreed 101 (26.95%). Neutral participants were 53 (14.29%) while those who disagreed were 5 (1.348%). These findings align with those of Al Shirah, Al-Omari and Igried (2021) who also established that there was a statistically significant difference between the groups that utilized the LMS and those that did not use the LMS.

The participants agreed LMS is accessible on multiple devices (Mean 3.9276, Standard deviation 0.81434). Chan *et al.* (2021) also established that the LMS design must be compatible with other devices to allow convenient learning for the students. Most participants, 180 (48.52%), agreed that LMS is accessible on multiple devices. This was followed by participants who strongly agreed 90 (24.26%), while 88 (23.7%) were neutral. The number who disagreed and strongly disagreed were 9 (2.426%) and 3(1.078%) respectively. The findings are supported by Chan *et al.* (2021), who also established that the LMSs need to be made in a way that is compatible with other devices to facilitate learning.

On average participants agreed LMS makes postgraduate learning easy (Mean 4.24, standard deviation 0.71376). These findings agree with Rizal *et al.* (2022) who also finds that there is a strong positive correlation between the ease of accessibility of the LMS program and the performance of the students in higher learning. Majority of participants 174(47.7%) agreed LMS makes postgraduate learning easy while those who strongly agreed were 145 (38.29%). Neutral participants were 49 (13.21%) while a negligible proportion 1 (0.27%) and 2 (0.539%) strongly disagreed and disagreed respectively. The findings support Chan *et al.* (2021) who established that the LMS needs to be made in a way that is compatible with other devices to allow convenient learning. The findings are also supported by Rizal *et al.* (2022) who established that there is a strong correlation between the ease of accessibility of the LMS program and the performance of the students in higher learning. Therefore, the use of LMS allows more students to access content, making the learning process easy.

The study sought to establish how Kusoma LMS affects the accessibility of postgraduate learning. The findings of the study are as follows: The majority of the participants agreed that LMS has features such as the user interface, the dashboard, learning materials and an interactive platform that contribute to their

learning experience. Regarding the dashboard, majority of the postgraduate students prefer Kusoma LMS since they believe it enhances access to learning components. On the interface most respondents believe the user interface is one of the main features of Kusoma LMS that facilitates navigation in the platform and promotes their positive learning experience. The interactions also emerged as important aspects that make Kusoma LMS attractive for the postgraduate students. Majority of the respondents said that the ability of the LMS program to offer an interactive session with other peers and tutors makes it easy for the learners to engage actively with each other hence improving their experience. In addition, the learning materials present within the LMS boosts the experience of postgraduate students hence promoting academic optimism. In the responses majority of the participants agreed that the learning materials have played a vital role towards their studies. Furthermore, most participants agreed that the ability to access both past and present learning materials in different forms from the LMS platform was a major boost in their learning experience. Using LMS the learners find learning easier since they can now access learning conveniently. Other students agreed that the ability to access the course at any given time is also one of the factors that are motivating them towards achievement of the course objective. Students who can conveniently access the course material and learning on their devices serve as important points which are used for the promotion of learning.

Majority of the respondents faced the challenge of slow or lack of internet access. In this context while others did not have the means to access the internet others were unable to afford the internet while others were in remote areas where internet was not accessible when they were out of session hence making it difficult for them to learn. Most of the respondents 143 agreed that they either had slow internet access or did not have internet access at all which limited their learning. Navigational challenges were among the issues that bottlenecked their experience with the use of Kusoma LMS program in their learning. Accessing the different areas, it becomes difficult for them to access the specific documents. Lack of specialized navigation skills makes it difficult for the students to complete their operations within the LMS and thus limiting access to the relevant material. The respondents proposed an upgrade of the system making it faster and more convenient as well as automation of some of the functions in the organization of the material were considered as the main recommendations that need to be upheld to achieve optimum functionality of the Kusoma LMS. Through upgrade of the system there will be improved performance, a faster system that will increase convenience and provide the services required more effectively. System automation was also proposed as a means of solving the LMS related challenges, while others recommended the need to increase the internet speed and also access to the internet.

Learning management system and academic optimism

The study sought to establish the effect of the LMS on academic optimism including the motivation to pursue postgraduate learning, support provided during the learning process, and the attitude of the students towards learning while using Kusoma LMS.

On average participants agreed LMS enhances their motivation for learning (Mean 4.2532, Standard deviation 0.70377). The findings support those of Daar *et al.* (2023) who found that the use of the LMS motivated students to complete their course by improving their learning experience. Most participants 48.06% agreed Kusoma enhances learning motivation while 39.28% strongly agreed, neutral participants were 11.37% while 1.29% disagreed. The findings are supported by those of Daar *et al.* (2023) who established that the use of the LMS motivated students to complete their course by improving their learning experience.

On average participants were neutral about the LMS features encouraging its use (mean 3.8372 standard deviation 0.65725). The findings support those of Oguguo *et al.* (2021), who established that the LMS promotes a positive attitude and encourages them to continue with the learning process. Majority 58.14% agreed Kusoma design supports studies and encourages its use. while 13.44% of the sample strongly agreed, neutral participants were 27.13% and 1.29% of the sample disagreed. The findings align with those of Chan *et al.* (2021) who found that the LMS needs to be made in a way that is compatible with other devices and provide the necessary aspects to allow student learning.

On average participants agreed that Kusoma LMS affects their learning experience (mean 4.0568 standard deviation 0.76981). The findings add to the results of Wang, Wu, and Chen (2024) who found that the use of the LMS improved a student's learning experience and boosted their performance. Majority of the participants 45.22% agreed that Kusoma affects their learning experience and 31.01% strongly agreed. Neutral participants were 22.22% and 1.55% of the sample disagreed. The findings are similar to those of Wang, Wu, and Chen (2024) who established that the use of the LMS improved the student's learning experience and boosted their performance. The results also support those of Chan *et al.* (2021) who found that the LMS has the correct features learners need hence it is used as a main feature in boosting the learning experience of the online students.

On average the participants agreed that technical challenges in the LMS affect the attitude of postgraduate students towards learning (mean 4.0646 standard deviation 0.74). The findings agree with those of Ajijola (2021) who opines that there was statistically significant variation in the attitude of students towards the implementation of LMS learning. Majority of the participants (54.26%) agreed while 27.39% of the sample strongly agreed that technical challenges in LMS impact learning attitude. Neutral participants were 16.54% and 1.03% of the sample disagreed. The findings align with those of another study by Ajijola (2021) who established that there were statistically significant differences in the attitude of students towards the implementation of LMS learning.

The findings established that the LMS program provides sufficient learning material that will encourage convenient learning among the students and therefore reduce the number of school dropouts. A significant number of the participants agreed that the learning material provided in the LMS platform is a motivation for them to engage in the learning process. Majority of the respondents agreed that LMS offered a convenient learning that had a positive effect on their learning process. The implication is that the convenience provided by the Kusoma LMS program has been important in influencing a positive outcome for the students and therefore is likely to reduce the number of dropouts who will leave school due to some factors such as lack of sufficient time to

be in session and also having other commitments. Majority of the participants also agreed that convenience offered by the LMS is a main motivating factor that led to their urge to engage in the postgraduate studies. Others agreed that the accessibility to learning materials and the ability to get it at any time were the main motivating factors towards postgraduate learning using the LMS based learning. The findings from this section shows that accessibility to learning and also the learning material are a major motivating factor that make the students want to pursue postgraduate studies. Convenience offered by the LMS also emerged as a main factor that motivates students' learning.

In other findings it emerged that technical challenges and other challenges that are facing the Kusoma LMS program make it difficult for the students to continue with their learning. Consequently, most students are discouraged and end up developing a negative attitude. When students are facing a network challenge such that they do not have access to the required resources within the time needed the learning process is interfered with and therefore could serve as a contributing factor towards a negative learning attitude. Some technical challenges tend to affect the morale of learners. The learners therefore are not feeling motivated to perform any task when they are facing some challenges within the system. The majority of the participants proposed that the LMS needs to provide more learning materials which will contribute to their experience. Through engagement with more materials, it will boost the morale for learning and make learning easier. A significant proportion of the students proposed that upgrading the system is one of the most appropriate solutions to the technical challenges being experienced with Kusoma while others recommended that offering training to the users both the students and the teachers, is one of the most effective approaches that can be used to solve the current technical problems. through training people will be equipped with the right skills to engage in the activities and interact with the software better thus achieving a greater height of experience. The respondents agreed that providing technical solutions to the current problems being faced by the LMS is one of the methods to solving the problems being experienced by students who are trying to use the LMS. Through technical solutions to small problems the change can be eliminated and a better method of handling challenges will be found. This means that there is a need for provision of technical support for the program which will ensure there are less challenges and that the system is effectively performing its functions at any time.

The study sought to determine the nature of the relationship of each of the aspects measured in academic optimism and the use of LMS through a regression analysis. The findings of the analysis are as reported below:

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.292 ^a	.085	.076	.59936

The model summary showed a weak relationship exists between academic optimism and use of LMS (R square 0.085) meaning only 8.5% of the changes in academic optimism can be explained by the use of LMS.

Anova table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.792	4	3.198	8.902	.000 ^b
Residual	137.229	366	.359		
Total	150.021	370			

The analysis of variance (ANOVA) test showed that a proportion of the change in LMS can be explained by the changes in academic optimism (F=8.902, P-value =0.000).

Regression coefficients

Model	Unstandardized		Standardized t		Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	4.470	.262		17.089	.000
Kusoma enhances motivation for learning	.223	.049	.252	4.524	.000
Kusoma design supports studies sufficiently and encourages its usage	-.016	.049	-.016	-.317	.041
Kusoma affects learning experience	.062	.046	.076	1.351	.008
technical challenges affecting attitude	.024	.044	.028	.543	.587

The regression coefficients table showed a positive y intercept which was statistically significant (Coeff. 4.47, P-value 0.001). The results showed it is statistically significant that Kusoma enhances the motivation for learning (Coeff. 0.223, P-value 0.00). The findings support those of another study by Daaret al. (2023) who found that the use of the LMS motivated students to complete their course through an improved experience. A negative and statistically significant relationship between LMS and whether Kusoma design supports studies sufficiently and encourages its usage was found (Coef. -0.016, P—value 0.041). The findings differ from those of another study by Chan et al. (2021) who established that the LMS needs to be made in a way that is compatible with other devices to allow convenient learning for the students. The differences in these findings can be attributed to the area of study where the sample for the current study was obtained from Kenyatta University and for the students who might be facing a challenge during the time of the study thus producing different results regarding the LMS.

The findings showed that a positive correlation exist between the learning experience and use of LMS (Coeff. 0.062, P-value 0.008). The findings are supported by the results of another study by Daaret al. (2023) who found that the use of the LMS motivated students to complete their course through an improved experience. It was determined that there is a positive correlation between the technical challenges affecting the student's attitude towards the use of LMS and utilization of LMS (Coeff. 0.024, P-value 0.0583) meaning the findings are not statistically significant and the effect is minimal. The findings add to previous knowledge by Ajijola (2021) who found that there were statistically significant differences in the attitude of students towards the implementation of LMS learning.

Conclusion

The study concludes that the inclusion of LMS in the learning process yields positive effects such as building the motivation for the students to learn, reducing the rate of postgraduate dropouts, increasing the frequency of students to teacher's interaction and also offering convenient access to course materials. Another conclusion is that Kusoma LMS provides flexibility in work-life balance, allowing students to design their schedules which balance their

academics and social life. However, the quality of interaction differs since, unlike a face-to-face interaction, the LMS offers virtual interaction, which means some elements of the communication, such as body language, are lost, which affects the quality of communication.

This study concludes that the ability to realize the full benefits of the Kusoma LMS is affected by the technological challenges the students come across. The more the challenges the less motivation students get to continue their studies and when the technological challenges persist, students drop out. The study also concludes that Kusoma LMS enhances student-teacher contact by providing chat box options and access to individual teachers' email addresses on the course materials.

Recommendations

The current findings showed that Kusoma LMS improves postgraduate learning in KU, allowing students to develop positive academic optimism which increases their performance. The study recommends that all higher learning institutions in Kenya integrate a LMS to provide alternative and flexible learning modes to their postgraduate students.

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