

**LEARNING MANAGEMENT SYSTEMS AND PERFORMANCE OF ONLINE
POSTGRADUATE STUDENTS IN KENYATTA UNIVERSITY, KENYA**

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DECLARATION

This research project has not been presented in any other institution and I declare the project to be my original work. I hereby consent that at its discretion, the University may make available this research proposal for reference.

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This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

I dedicate this project to the Kenyan youths who are finding their way through education in Kenya. I dedicate this project to my lecturer, Dr. Ng'eno, KWA, for his extended guidance and support role as a supervisor during the writing period. I also dedicate this project to Munyui Dennis for his extended support.

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ABBREVIATIONS AND ACRONYMS

ANOVA-	Analysis of Variance
CART-	Classification and Regression Trees
CAT-	Continuous assessment tests
CEP-	Continuing Education Program
DVC-	Deputy Vice-Chancellor
KU-	Kenyatta University
LMS-	Learning Management System
NACOSTI-	National Commission for Science, Technology, and Innovation
RIO-	Research Information Office
SAES-	School of Agriculture and Environmental Studies
SELL-	School of Education and Lifelong Learning
SLASS-	School of Law, Arts, and Social Sciences
SOBET-	School of Business, Economics, and Tourism
SPAS-	School of Pure and Applied Sciences

OPERATIONAL DEFINITION OF TERMS

Academic optimism	Intrinsic motivation to learn develops when one uses an education model that incorporates technology
Course completion	Finishing all the activities and tasks that are related to the specific course
Kusoma	The learning management system at Kenyatta University
Performance	The dependent variable construct
Postgraduate online students	Students enrolled for their second or third courses after their undergraduate digitally at Kenyatta University
Teacher-student contact duration	The amount of time spent between the teacher and student interacting and communicating or consulting on school-related matters

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 sought to find out the effect of the learning management system on academic optimism, examine the effect of the learning management system on course completion and to determine the effect of the learning management system on teacher-student interaction for the online postgraduate students at Kenyatta University. The study was anchored on self-deterministic theory and technology acceptance model. 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 total number of valid participants was 371. The mean for the frequency of use was 1.6951 and the standard deviation (SD) was 0.62342. The median was 2 and the mode was 2. The mean of 1.6951 implies on average the participants agreed to have been using the LMS weekly while the SD of 0.62342 implies that the highest and the lowest values do not deviate much from the mean such that there are no outliers which indicate the use of the LMS on a weekly basis was agreeable. The key findings showed that the *Kusoma* LMS contains several design features such as the dashboard with the user interface that facilitates navigation of the *Kusoma*, enabling learning virtually. The functionality of the dashboard features makes *Kusoma* easy to use and allows convenient engagement in learning activities by providing the required tools for effective learning. The LMS also provides an option for the learners to access learning materials from anywhere they are which promotes self-paced learning. The findings showed that the features of LMSs enhance students' experiences while learning which enhances 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 being used in their education due to the ability to access learning material at any point and convenience in communication. Lack of technological know-how emerged as a major setback in course completion since the students lack the fundamental skills in information technology. The frequency of interaction between teachers and students is increased due to the presence of communication tools such as a chat box and lecturer emails in the notes. 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. 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 the *Kusoma* LMS be upgraded into a better version that will offer more realistic interactions that simulate leading social media platforms such as WhatsApp which can significantly bridge the impersonal touch issue, and that KU develops of an offline version of the *Kusoma* LMS which will be accessible to all students using different devices without internet access.

CHAPTER ONE: INTRODUCTION

1.0. Introduction

The first chapter of this research presents the introduction into the research for one to understand the key concepts of the research. The section captures some background of the study, a statement of the problem, the research objectives, research questions, the justification and significance of the study, the scope and limitation of the study.

1.1 Background to the Study

A Learning Management System allows the organization of 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 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 Rawashdeh *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.

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 Moloji (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.

The LMS is described by Araka *et al.* (2021), as a technological tool with features that promote the ability of learners to self-regulate while studying. In Kenya, the LMS is widely accepted which is attributed to the identification of the unique features of the system that make it convenient for learning. According to Cavus and Mohammed (2021), the convenience of the LMS in organizing and facilitating lessons digitally is the main factor that led to the high adoption rate in the country. The LMS was used by leading Universities in Kenya during the COVID-19 pandemic. Maua (2020), states that there is a change in the learning experience for students after the adoption of LMSs in schools. When learning is conducted virtually, it becomes easier for learners to enroll and access tutorials and other resources that enhance their learning process as online students. Mwaniki, Ireri, Chege, and Njihia (2020), also add to this position by stating that the LMS is effective in enhancing interaction between the tutor, the administration, and the students, through the user interface.

The internet and technology are fully fledged in Kenya. The growth and access are largely localized within the urban areas leaving the rural parts of the country lagging with poor adoption. Only 33% of Kenyans are using the internet (Wafula, 2021). The adoption of the LMS is, thus, limited to schools within urban settings. However, the use of digital learning

is widely accepted among teenagers and young adults hence making online learning more pronounced in the higher education institutions in Kenya. Moreover, the LMS increases the convenience of accessing resources hence making it easier for Kenyan students to continue with their studies anywhere and at any time.

It follows that there are many obstacles facing Kenyan Universities, especially the government-owned ones in the adoption and running of digital schools that use the LMS. Some of the hindering factors include poor funding by the government, misappropriation of funds by the schools, weak leadership in schools, insufficient skills from professionals and students, and poverty within the country (Kibuku, Ochieng, &Wausi, 2020). These obstacles limit access to higher education and the internet making it difficult for Kenyans and institutions to acquire and implement the LMS in digital learning. The LMS needs to be implemented using effective strategies of new program implementation to meet the needs of the universities. The LMSs will accommodate student's needs and the teacher's ability to customize the course content but can only be hosted in institutions that have overcome many of the obstacles encountered in Kenyan universities.

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.

The spread and use of the LMS is a matter of necessity for Kenyatta University students to continue learning with other disruptive factors held constant. The increased enrollment in KU makes the demand for higher learning surpass the convectional dynamics of face-to-face studying (Mwaniki *et al.*, 2020). Many students in lockdown, due to COVID -19, were

compelled to use the LMS to observe the semester timelines. The use of the LMS also helped KU to maintain the school calendar and avoid prolonging the duration of completing courses for students. Ultimately, the COVID-19 period accelerated the registration and transfer of regular students to digital school more than any other time. In the post-pandemic era, more registrations in the digital school occurred which increased the overall number of online students. KU successfully operates all year round with trimesters due to the LMS.

1.2 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. With close to a decade of the implementation of digital learning with huge investments in the LMS by the Kenyatta University administration, several studies have been conducted. In 2016, Makokha, from KU and Mutisya conducted a qualitative study to establish e-learning status in government-owned universities in Kenya. Questionnaires were used to collect data from 240 participants and descriptive analysis was done. The findings in the study revealed that universities lack ICT skills with a staggering 87% of course content found to be non-interactive.

In 2021, other KU students, Araka *et al.* investigated how self-regulated learning is promoted by a learner's perception of the LMS interface. A structured survey was shared via mail and 495 responses were received. As a mixed study, the data was analyzed using content and descriptive analysis. The findings established that students had several challenges including limited interaction with the instructors and fellow learners, outdated or mixed-up instructions in the LMS, and lack of tailored feedback on an individual's course progress were also noted. Ndege *et al.* (2023), looked at the retention of online students in universities based on the academic support provided, noting that 15% of university dropouts emanate from the digital school. Using a cross-sectional survey design

and 322 participants, a questionnaire was administered and regression analysis was carried out. The results indicated the existence of a positive relationship between academic support and retention level. All the studies focus on diverse issues concerning the operationalization of the LMS but not performance indicators in education. Thus, there is a gap in empirical evidence in investigating specific performance indicators such as academic optimism, course completion, and student–teacher contact in LMS using a mixed research methodology that would provide reliable and factual data for Kenyatta University Digital School. 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.

1.3 Objectives of the Study

- 1 To find out the effect of the learning management system on academic optimism for online postgraduate students at Kenyatta University
- 2 To examine the effect of the learning management system on course completion for online postgraduate students at Kenyatta University
- 3 Determine the effect of the learning management system on teacher-student interaction for the online postgraduate students at Kenyatta University

1.4 Research Questions

- 1 What is the effect of the LMS on academic optimism for online postgraduate students at Kenyatta University?
- 2 What is the effect of the LMS on course completion for online postgraduate students at Kenyatta University?
- 3 What is the extent to which LMS affects the teacher-student contact duration for online postgraduate students at Kenyatta University?

1.5 Justification and Significance 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. This study's findings are significant across various sectors including the government, Kenyatta University administration and online students in Kenyatta University. Each group is affected differently by the outcome. Specifically;

To the government of Kenya, the study findings provide critical information to policymakers in parliament and the education sector. This study facilitates the understanding of the shift in the education sector even more which is essential in grasping the dynamics of social change. Understanding the effects of the use of LMS on the performance of postgraduate students contributes to the knowledge base of policymakers leading to informed policy priorities for the education sector which might include tax exclusions on LMS development or purchases, allowing more universities to be able to integrate it as a mode of study. In essence, the Kenyan government through understanding the effects of the LMS can formulate policies that allow the spread of education into remote areas. Kenya is constantly faced with obstacles such as insecurity in marginalized areas which threaten education (Kilonzo, 2023). Digital learning can be implemented in such areas with the help of an effective LMS.

This study's findings are important to software developers who design the LMSs. In the current research, some of the findings pointed out gaps that the developers can address. The software developers can advance the LMS to enhance online students' performance

substantively. The developers, therefore, will help with the development of a higher-quality product that serves the needs of all learners effectively. The Kenyatta University administration will find this study's findings significant since it can inform the development of a more robust LMS. When university administrators understand the effect of the LMS on online students' performance they will have the capacity to maximize its competitive advantage. The administrators will also have a chance to formulate mitigation measures to overcome the negative effects that were established, thereby, improving the online learner experience.

The findings from this research are also important to online students using the LMS. In most instances, students do not have the platform to comment or state their experiences with the LMS. Neither do the students have a way to evaluate the LMS effect on postgraduate performance. Selecting the postgraduate students as participants in the study is therefore crucial. Since the study can be generalized for all online students, the results will help the students have objective self-reflections about their education choices and the mode of study they selected.

1.6 Scope of the Study

The study's target is Kenyatta University with a special focus on the online postgraduate students enrolled in the digital school. The study targeted students from all faculty schools in DSVOL at Kenyatta University.

1.7 Limitations of the Study

Kenyatta University was the focus of the study which means some of the outcomes obtained from the study would be localized to KU and thus not applicable in a wider context of Kenyan Universities. The sampling method used in this study: convenient volunteer sampling may further limit the generalizability of the outcomes of this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter is comprised of literature that is carefully selected and reviewed to provide existing knowledge and perspectives on the study variables. The review contextualized the study variables and improved the understanding of the research topic. The literature review aided with the identification of the existing research gaps that were filled by the current research. This chapter contains three main sections including the empirical review, the theoretical review, the summary and a gap table. In the empirical review, the section comprises a review of the past studies done on LMS; the theoretical review part includes a comprehensive theoretical framework that supports the current research. The summary table details gaps identified from the empirical review that this study filled. Since the study is mixed research, it also includes a conceptual framework that shows the conceptualization of the different variables.

2.2 Empirical Review

This section details relevant past research works that relate to the focus of the current study. This section denotes the gap that this study filled. It also shows the contribution that was made by the current study in the focus area according to the identified gaps from the existing studies.

2.2.1 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 students' performance. The study also found that the students with the ease of using the blackboard had a better performance. The study reflects a contextual and methodology gap where it focused on studying the performance of the students based

on the use of LMS using a quantitative study. The current study used a mixed study design and was conducted in Kenya.

Razaliet *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, responses were randomly selected. The findings of the study showed that there was 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 revealed a theoretical, methodology and a contextual gap. In the methodology gap it focused on the quantitative approach while the current study focused on a mixed research method. In the contextual gap, it focused on Putra University while the current study focused on Kenyatta University, the study did not have a theoretical underpinning while this current one utilized 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 from the study. The contextual gap was that the current study focused on Kenyatta University while this study focused on Jordan. The methodology gap was that the study used a quantitative study while the current study used a mixed research method.

2.2.2 Learning Management Systems and Academic Optimism

Daaret *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 study revealed a theoretical, methodological, and contextual gap. The study was qualitative and was applied within the context of an Indonesian university. The current study however focused on Kenyatta University in Kenya and was 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 students' learning experience and boosted their performance. The study revealed a conceptual and methodological gap in that it employed a quantitative design and tested the effects of blended learning on LMS programs while the current study used a mixed research method and focused on the effect of LMS among postgraduate performance students in Kenyatta University.

Ajijola (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 utilized self-deterministic and technology acceptance model theories. The study also revealed a conceptual gap, a methodological gap, and a contextual gap. The conceptual gap showed where the study focused on learners' attitudes while the current study focused on the effect of LMS on the

performance of postgraduate students. The method used was quantitative while the current research used mixed methods. The context for the study is Nigeria while that of the current study was Kenyatta University.

2.2.3 Learning Management Systems and Course Completion

Tamada, Giusti, and Netto (2022) conducted a study to determine the relationship between school dropouts and the use of LMS-based learning. The population was all the students enrolled in technical courses while the theoretical underpinning was Machine learning techniques. The study utilized a correlation design using a sample of 394 students obtained through convenient sampling from three random courses. The data was collected using the self-reporting structured questionnaire and analyzed through a correlation analysis and decision trees. The findings of the study showed that the probability of students dropping out of school while using the LMS was lower due to the flexibility provided by the LMS. The study denoted a methodological gap as it utilized a quantitative approach while the current study utilized mixed research methods.

Another study by Oguguo *et al.* (2021) aimed at determining the effect of the LMS on the performance of students. The study employed a nonequivalent experimental design with a sample of 232 students (109 male and 123 female) from Imo State University in Nigeria. The study had no theoretical underpinning. The data was collected using a structured questionnaire and the analysis done using the Richardsons formula. The findings showed a positive relationship between the use of LMSs and the students' performance. A methodology and contextual gaps was established. The study employed a qualitative design while in the current study, the approach used was mixed research methods. Considering the context the study was conducted in Nigeria while the current study was conducted in Kenyatta University, Kenya.

Seo, Kim, and Ju (2021) analyzed variables such as age, educational experience, and the use of LMS and its influence on course completion. The study utilized a 60-point scale to determine whether the students were satisfied and whether they were likely to drop out of school. The sample utilized was from 1,130 participants, selected from five institutions of higher learning that served as the population. There was no theoretical underpinning for

the study. The analysis of the data showed a negative relationship between age, utilisation of LMS and students' dropout rate. The findings also showed that some adults felt like dropping out of school due to the inability to utilize the LMS effectively. A methodology and theoretical gap was established where the method used in the study was quantitative while the current study used a mixed research approach. There was also a theoretical gap where the theory used in the study was not mentioned while the current study used the self-deterministic and technology acceptance model theories to explain the study variables.

2.2.4 Learning Management Systems and Teacher-Student Contact Duration

Bradley-Dorsey, *et al.* (2022) investigated the relationship between students to teacher and student-to-student interaction using the LMS. The population was primary and secondary schools with cybercafes in the U.S.A. The study utilized a sample of 5,458 participants including parents teachers and students. The study tested the hypothesis of whether there was a relationship between the use of LMS and how it affected the relationship between students and teachers. The study employed a survey design where data was collected using a structured questionnaire and analyzed using a structured t-test. There was no theoretical underpinning for the study. The findings showed a significant difference in student and teacher interaction in online classes and the face-to-face interaction. The study found that the face-to-face classes had the limitation of time while the LMS offered flexibility in the process of interaction hence leading to improvement of the interactions between the groups. Based on the findings the main gap identified was the methodology gap where the study utilized a quantitative design while the current study used mixed research methods.

Tirronen, *et al.* (2020) conducted a study that investigated the teacher-student relationship and interaction with the LMS program as compared to the interaction on a face-to-face basis. The population was the CS1 and CS2 students. Quantitative survey study that involved a sample of 300 participants who were selected using a simple random sampling method. There was no theoretical underpinning for the study. Data was collected using a survey questionnaire and analyzed through statistical methods; regression analysis. The findings from the study showed the use of LMS was not considered as a method that increased interaction between the teachers and students but instead, the face-to-face

conversations were considered the first and most effective method of increased duration of encounters between the teacher and students. The study presented a methodology gap where the study used a quantitative design while the current research employed a mixed research method.

Teng and Wang (2021) investigated the relationship between teachers and students in the traditional learning system and the use of LMS. The study used a quantitative survey design where data was collected from learning institutions in China for undergraduate and graduate students taking English courses using a structured questionnaire. The sample was 268 of the students. There was no theoretical underpinning for this study. The data collected was analyzed using statistical analytics; the T-test and ANOVA. The study showed that students who were engaged in the LMS program more likely to engaged with the teachers effectively than those in the physical class. The convenience for the interaction was facilitated by the use of the LMS outside the physical classes. A contextual and methodology gap exist. The contextual gap was that the research was conducted in China while the current research was in Kenyatta University. The methodology gap was that the research was quantitative while the current research used mixed research methods.

2.3 Theoretical Framework

This section presents the theories that will be used for the current research. The theories expounded were used to explain the interactions between the variables in the current study. The main theory for this study is the self-deterministic theory which explains the dynamics of all of the three objectives of this study. The study is also guided by the Technology acceptance model (TAM) that explains the psychological behavioral and technological mechanisms affecting postgraduate students specifically in their academic optimism, course completion and the teacher to students contact.

2.3.1 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 learners become intrinsically motivated when they are provided with autonomy competency and relatedness to the current topic being studied. The theory can be linked directly to the current study variables in different ways.

Academic optimism—The SDT learners need to take charge of their learning since it helps them in achieve their desired academic success. The LMS therefore gives the learner autonomy to decide when to do the activities. They are encouraged to learn and study since they are in the environment where they can control their activities at any given time and organize their activities independently hence achieving academic optimism.

Course completion-- Since the LMS based learning is about self-independence and autonomy. The student works to achieve competency in the areas by setting the personal goals and working towards achieving them. In this regard they tend to achieve the self-motivation by challenging themselves to achieve more thus achieving the course completion in the end.

Teacher-student contact—the SDT dimension of relatedness displays the ideas of how the students get feedback and perform their consultations or seek clarification from their instructors. The autonomy and self-dependence as well as the ability to seek feedback at their given time work as a motivation to continue with their activities. This improves the student to teacher contact using the LMS which offers more flexibility to the students' activities.

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.

Contradiction and limitations

The SDT believes primarily on internal motivation and forgets the other external motivators such as the deadlines the supervisor pressure and also the institutional policies that are likely to impact the motivation of the student to use the LMS. In addition, the theory does not address the issue of technology barriers like the internet downtime, digital literacy and also the usability of the interface which are also significant in influencing the behavior of the user or the students making them to behave in a particular pattern.

Identified gaps

The current studies are applying the SDT with the focus on the motivation but there is no single study that relate it to academic optimism, online course completion or even teacher to students contact for the postgraduate students among the students using LMS. this study therefore addresses the gap by linking SDT to these three constructs.

2.3.2. Technology Acceptance Model

The proponents of this theory are Fred Davis (1985) and Richard Bagozzi (1989). During the development of Davis's doctoral dissertation in 1985, he investigated the factors that affect the use and acceptance of computer technology in the workplace. The development led to the discovery of the theory of reasoned action in philosophy which formed the foundation of the technology acceptance model. The other proponent is Richard Bagozzi (1989) who expanded this theory to achieve its validation. Both parties performed a series of tests which ended up contributing to the academic knowledge using their discovered model. According to Fred and Davis, the technology acceptance model states that the perceived usefulness and perceived ease of use will influence the behavior intentions of using a particular technology hence affecting their actual behavior of use. Nonetheless,

external factors such as personal norms, prevailing conditions and the relevance of the technology will affect their workplace.

The LMS is a new technology that is aimed at improving the learning process for students and tutors. Technology access in many learning institutions has been influenced by the understanding of the perceived value or usefulness of technology in performing some complex tasks. However, the acceptance of the technology will be influenced by the perceived ease of use which is defined by the type of graphical user interface present, the knowledge of using the technology and compatibility with the devices. Furthermore, there are also other externalities likely to affect the adoption of this technology and they include the student's attitudes, level of knowledge, device compatibility and level of income that affect academic optimism and course completion for postgraduate online students. The theory applies to the different study variables in different way.

Academic optimism: postgraduate students perceiving LMS as useful and easy gain confidence in their possibility of for academic success which builds academic optimism.

Course completion: TAM explain how use of LMS impact course completion. Systems easy to use facilitates consistency in engagements and timely submission of the coursework and also a high completion rate for the students. This is based on the achievement of the perceived value produced by the use of LMS.

Teacher-student contact: the perceived ease of use impacts the students use of LM encouraging them to be using the platform more. The introduction of the effective communication tools between the student and the teachers makes it necessary for them to interact with the students more leading to an enhanced teacher to student contact.

Contradictions and limitations

TAM is more focused on the technological perception and ignores the concept of psychological construct such as the motivation and effort which is captured by the SDT. It assumes the rational decision making which might not be applicable in other times as the student might focus on other factors such a stress, fear and fatigue. In this regard TAM

does not fully represent the interaction between LMS and its actual impact on academic outcomes.

Identified gaps

Current literature shows application of TAM in the adoption of technology and therefore doesn't capture how it can be used to impact teacher-students contact and academic optimism on the online learning for postgraduate student. The current study therefore addresses this gap effectively through consideration of this interaction.

2.4 Summary of Literature & Gaps to be Filled by the Study

The researcher reviewed different aspects of the LMS in different countries and also at different educational levels (see table 2.1) and highlighted the methodological, contextual, theoretical and conceptual gaps in the documents. During the review different gaps that are associated with the current study variables were noted as they were not adequately addressed in the previous studies.

Knowledge gaps

The existing studies did not capture how the use of LMS influences academic optimism, course completion and also the teacher-students contact duration for the online postgraduate students. The previous research focused more on the usability of the tool, the student's attitude and technology acceptance but doesn't explore the three variables that form the fabric of the current study. In addition, there were few studies that incorporate the psychological motivation captured in the self-deterministic theory, and the technology adoption model to explain the behavior of the postgraduate students when using the LM platform.

Research gap linked to study variables

LMS and Academic Optimism

Among the variable identified no empirical studies provide a direct linkage of how the LMS influence the academic optimum of the postgraduate online learners the previous studies focused on the satisfaction the attitude and blended learning and therefore this

leaves the gap to understanding how the use of LMS promotes the learner's confidence and motivation to achieve a higher academic success

LMS and course completion

The existing studies focus on dropout rates and the students rate of persistence but it does not focus on the course completion as an outcome of the use of LMS. There is limited knowledge that focuses on the influence of the use of LMs on the students completing the course which is going to be addressed by the current study.

LMS and teacher-student contact duration

Previous studies focused on the quality of interaction but none focused on the duration in which the teachers interact with the students on the LMS platform. The studies compared LMS with face-to-face learning but doesn't focus on how it increases or reduces the contact time among the online postgraduate program.

Actual gaps to be filled by the current study

The current study investigated how the use of LMS affects the academic optimism, course completion and also the teacher to student contact duration which are variables that had not been studied in the previous studies.

The current study focused on the postgraduate online students at Kenyatta university which is a unique population that have not been studied in the same topic before. The previous studies were conducted on the people of Europe, Nigeria, the middle east and Asia.

The current study also addresses a different methodology since it uses a mixed research design which helps in addressing the methodological gap since the previous studies mostly focus on the quantitative approaches.

The linkage of the current study to the self-deterministic theory and technology acceptance model helps in addressing a theoretical gap since the previous studies focused on different theories and others lacked an anchoring theoretical framework.

Table 2.1: Summary of Literature

Author (year)	Study Variables	Main Findings	Gap (s)	Focus of the Current Study
(Ajjola, <i>et al.</i> , 2021)	Distance learners' attitude The use of LMS	Students have a positive attitude toward LMS implementation	Contextual gap (focus on Nigeria) Methodology gap (quantitative)	Focus on Kenyatta University Mixed Research methods
(Bradley-Dorsey, <i>et al.</i> , 2022)	Teacher- student interaction. Students Utilization of the LMS program	Improved student-teacher interaction with LMS use than in face-to-face engagement.	Methodology gap (qualitative)	Mixed research methods
(Chen, <i>et al.</i> , 2023)	Use of ELEM LMS Students' collaboration Perceived satisfaction	LMS students are more satisfied than those in face-to-face study	Methodological gap (quantitative) Conceptual gap (perceived satisfaction)	Mixed research methods Academic optimism
(Daar, <i>et al.</i> , 2023)	LMS attitude Students learning	Positive perception among LMS students leading to course completion	Methodology gap (qualitative)	Mixed research methods
(Oguguo, <i>et al.</i> , 2021)	Students' performance	LMS promote positive attitude	Methodology gap (qualitative)	Mixed research methods

	Effect of LMS	and reduce student dropout rates	Contextual gap (Nigeria)	Kenyatta University
(Seo, <i>et al.</i> , 2021)	Age Education Experience Adoption of LMS Course completion	LMS helps young graduates learn better and reduces the possibility of dropouts but old people are conservative	Conceptual gap (adoption of LMS and experience)	Academic optimism
(Tamada, <i>et al.</i> , 2022)	School dropout rate LMS adoption	Negative relationship between dropout rate and use of LMS	Methodology gap (quantitative)	Mixed research methods
(Teng & Wang, 2021)	Teachers' and students' relationship Traditional learning system LMS system	LMS provides more student-to-teacher interaction by increasing hours of interaction	Methodology gap (qualitative) Conceptual gap (comparative past and present)	Mixed research methods Academic optimism and school completion rate
(Tirronen, <i>et al.</i> , 2020)	Teacher-student relationship LMS use Face-face interaction	Teacher-student interaction is boosted by the use of LMS	Methodology gap (quantitative)	Mixed research methods
(Wang, <i>et al.</i> , 2024)	Physical teaching	LMS provide convenience and enhances the	Methodology gap	Mixed research methods

	Use of LMS	student's learning experience	(quantitative study) Conceptual gap (Comparative LMS vs Physical teaching)	Course completion, academic optimism, interaction duration
(Alshira'h, et al., 2021)	LMS User experience	Statistical difference that is significant between groups that utilized the LMS and those that did not use the LMS.	Focuses on Jordan Quantitative research	Focus on Kenyatta University Mixed research methods
(Razali, <i>et al.</i> , 2022)	Accessibility LMS use	Strong correlation between the ease of accessibility of the LMS and students' performance in pursuing higher education	Quantitative approach Puntra University	Mixed research methods Kenyatta University
(Darko, 2021)	Blackboard usage Students' performance	Strong positive linear correlation between the times spent on the blackboard.	Focuses on studying the performance of the students based on the use of LMS using a	The effects of LMS the the performance of postgraduate students using a mixed research approach.

			quantitative study.	
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Source: Researcher (2024)

2.5 Conceptual Framework

The study utilized different variables both dependent and independent which are also measured using different indicators. The LMS is the independent variable measured using three indicators which are accessibility to the technology (end user support), the usability of the technology (efficiency), and the graphical user interface provided by the technology (interaction). This will affect the dependent variables which include academic optimism which is measured using three indicators such as learners' motivation rate, learning experience, and attitude. The second dependent variable is course completion which is measured by the dropout numbers, students' performance, and possible technological challenges, the third dependent variable is the teacher-student relationship which is measured through indicators such as flexibility of interactions, the frequency of interaction as well as the quality of interaction. See the conceptual framework below:

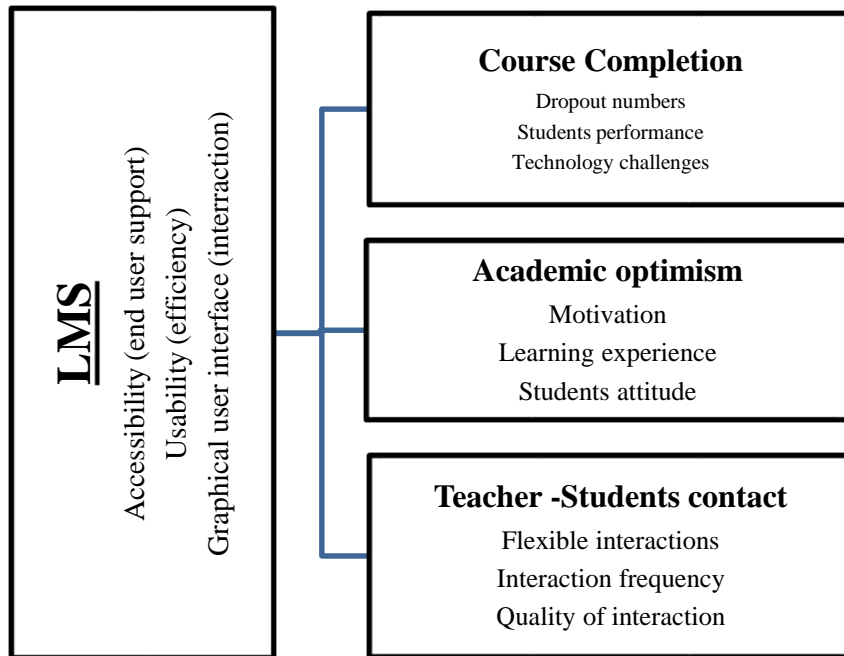


Figure 2.0-1: Conceptual Framework

Source: Researcher (2024)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter comprises the approach undertaken by the researcher to respond to the research questions and meet the study objectives. Specifically, the researcher presents the research design choice for this study, including the selected population and sample size and the sampling procedures used, the section also includes the data collection description and the procedures that guided the data analysis.

3.2 Research Design

This was a mixed study. A mixed study uses more than one research method. This study used a quantitative survey research design and a qualitative phenomenological research design. The selection of the mixed research method was informed by the need to have a 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. The interest was to capture a holistic explanation for the results obtained in the quantitative research using insight from the qualitative study to be able to make generalizations. In this respect, a quantitative survey design was selected and used for this study as well as a qualitative phenomenological research design. The survey design involves the researcher conducting surveys from a sample of the population to get an understanding of a particular subject matter (Ponto, 2015).

The current study's variables informed the selection of the research designs and the approach to be employed which involved collecting data directly from the participants in KU using a structured questionnaire. The survey research was applied to only variables that could be measured using numerical terms. The qualitative phenomenology design was chosen since it aids in studying how people experience or respond to a given phenomenon (Rodriguez and Smith, 2018). The current study sought to understand the experiences of the students and tutors as the users of the LMS. In this realization a phenomenological research approach was appropriate. The design was useful in studying the experiences of the students with regard to their use of the LMS.

3.3 Target Population

It was all the online postgraduate students at Kenyatta University.

Table 3.1 Target Population

School	Frequency	Proportions
SPAS	20	0.4%
SLASS	889	20%
SAES	282	6%
SOBET	2894	64%
SELL	434	9.6%
Total Online Students Population	4529	100%

Source: Kenyatta University Admissions (2024)

3.4 Sampling and Sampling Procedure

The Krejcie and Morgan model is a credible formula used to compute the appropriate representative sample size given where the absolute population is known. The model uses a set formula:

$$s = \frac{XNP(1 - P)}{d'(N - 1) + XP(1 - P)}$$

Krejcie and Morgan employed the formula to develop the Krejcie and Morgan table for the population and sample (see Appendix III). The table was then used to determine the appropriate total sample size for this study. In the current study, the size of the population obtained from the Kenyatta University admissions database as authorized in Appendix IV is 4529. The table matched 4529 with 354 participants which made up the sample size.

The sampling method used for the study was convenient sampling. According to Ponto (2015), convenient sampling occurs when the researcher selects only the sample that they can conveniently reach during the period of the research. In this context, volunteer convenient sampling was utilized as only the postgraduate students who could be reached physically and virtually at the time of data collection were considered for the study. The

selected participant however had to meet the inclusion criteria. Among the factors of consideration include the participant's need to be at the university for at least one semester for them to have understood and interacted with the LMS. This was to ascertain that the postgraduate students taking part in the study knew the functionality of the LMS and had interacted with it during their learning.

3.5 Data Sources and Instruments

The data collection instrument was a questionnaire with structured closed-ended and open-ended questions to collect primary data. The use of a questionnaire was preferred as it could be filled at a self-paced time of the participant besides having a pre-determined structure that resulted in uniform data collection. The collection of primary data was the most reliable data which was why this study prefers first-hand data collection compared to secondary data. The structured closed-ended questionnaires were for the quantitative section while the structured open-ended questionnaires were for the collection of qualitative data.

3.6 Pilot Study

The pilot study was conducted on Continuing Education Program (CEP) students at Kenyatta University who are in a different mode of study from DSVOL, which is the focus of this study. This was to ensure that the pilot study sample is not selected from the main population, which is the postgraduate online students. The total sample size used for the pilot study was 35 participants, which was determined using the Krejcie and Morgan model sample calculator. Then the sample was selected using a convenient volunteer sampling method. This was to create a real scenario like the one in the real research. Data was collected from the sample using structured closed-ended and open-ended questionnaires. The outcome of the pilot study was used to measure the validity and reliability of the data collection instrument as well as help pinpoint the different challenges that might have been unforeseen by the researcher. The data obtained was used to calculate Cronbach's alpha, a method of measuring the reliability of the data collection instrument. The unit of analysis in this case was the performance of the student while the unit of observation was the use of LMS.

3.6.1 Validity of the Research Instrument

The data collection tool, in this case, a questionnaire, was assessed to establish the degree to which it was to collect the intended data. To establish face, construct, and content validity, expert opinion was sought and the researcher approached the assigned supervisor and presented the tool for review. The supervisor evaluated the questionnaire and gave feedback on the ability of the questionnaire to facilitate data collection of intended constructs. The researcher also approached four PhD students in the faculty of SLASS who reviewed the questionnaire and provided their feedback. The feedback was to adjust the structure of the questionnaire and the flow of questions to enhance clarity. The researcher took all feedback and adjusted the questionnaire accordingly.

3.6.2 Reliability of the Research Instrument

The Cronbach's alpha approach was used to assess the reliability of the data collection tool. A group of respondents were assembled and requested to fill in the questionnaire upon which their responses were keyed into an Excel sheet to enable the calculation of the correlation coefficients using the model's calculator. The scores that were 0.70 and above meant the questionnaire items reflect the relationship with other items in the questionnaire and are acceptable to use as is while those that fall below 0.70 needed to be revised to be more aligned to the concept being researched. The study questions scored 0.700189 which meant the questions were suitable to be used for the study.

3.7 Data Collection Procedure

The data collection process was done through the use of a questionnaire. The questionnaire comprised both open-ended and closed-ended questions. The researcher obtained authorization to collect data from the school administration, the participants of the study and the National Commission for Science, Technology, and Innovation (NACOSTI), which is the legal body for authorization of research in Kenya. An authorization letter from Kenyatta University was also obtained and submitted to NACOSTI as proof of approval of the research and data collection.

The participants were presented with questionnaires which comprise two parts. The first section comprised the quantitative questions while the second part contained the qualitative

questions. The procedure for administering the research involved sharing the questionnaire through social media platforms such as WhatsApp and other direct communication methods. The researcher joined various faculty WhatsApp groups and shared the link to the questionnaire. The researcher created A4 flyers with QR codes and posted them on the Ole Moi Yoi Lecture halls during the examination period on 14th of December 2024 for digital students. Further, the researcher approached the students during the lunch break, handing them the A3-size types of flyers that the students could carry and scanning the QR code for the questionnaire after the exams (See Appendix III for the flyer).

The questionnaire presented the participant with three sections; the first was the informed consent form where the participants were asked to consent. The second part was the eligibility criteria where the participants were vetted for their eligibility. Once the two steps had correctly been filled out, the participant was presented with the questions to respond to. The participant was allowed sufficient time to respond to the questions and then send the filled questionnaire back to the researcher. During the data collection process, there was minimal interruption by the researcher to prevent biased responses.

3.8 Data Analysis and Presentation

Statistical analysis was conducted on the quantitative data. This included methods such as descriptive statistics which include the mean and the standard deviation. Inferential statistics was analysed using Pearson correlation co-efficient, regression model, analysis of variance (ANOVA), student T- test, and Fisher's test. Linear regression establishes the relationship between the LMS and performance of academic optimism, course completion, and student-teacher contact. The model is also useful in predicting the future trends in terms of LMS effects on the performance indicators, thereby, allowing the Kenyatta University administration to prepare and invest accordingly.

Formula:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Y = Learning Management System

β_0 – Constant (Y value while X = 0)

$\beta_1 - \beta_3$ –Regressors – effect in Y caused by unit changes in X variables

X_1 – Academic optimism

X_2 – Course Completion

X_3 - Teacher-Student Contact Duration

ε – Error term

Additionally, frequency tables were used to present the data and included the use of percentages, and pie charts. Qualitative data was analyzed using thematic analysis, a method of analyzing data that involves assigning codes and then merging the codes to obtain themes. In this approach, the data is coded for the first time and the responses are assigned primary codes. In a second coding process, similar codes are merged to form more concrete codes that can be used to develop themes. Axial coding is then done where the codes are developed into the themes. The study therefore presented the outcome in the form of themes.

3.9 Ethical Considerations

Ethics of research demands that the person exercise ethical compliance at the highest level. In the current research, ethical consideration is showing respect for others and their authority. In this consideration, the current research sought consent from all the relevant authorities for every step of their research. The first consent was sought from Kenyatta University where approval for conducting the research was obtained. Informed consent

was sought from the participants. All details about the research were provided and the participants were required to sign an informed consent form before taking part in the research.

In addition, data protection was a priority to ensure the participants' information and responses remained private. The researcher protected the data collected, only using it for the purpose stated in the informed consent form and it was not handled by a third party. The data collected was strictly anonymous and no personal identification information was collected.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter comprises the presentation of research findings obtained upon completion of the data collection and analysis process. The analysis is sectioned as follows: Demographics, Learning Management Systems, LMS and Academic Optimism, LMS and Course completion, and LMS and Student-teacher contact duration.

4.2 Response rate

The targeted sample was 354 participants but received an overwhelming number 371 of duly filled questionnaires back. This represents 105% of the response rate and it was found useful to analyse the entire sample. The reason for the response rate higher than 100% is due to the fact that the study was conducted online and the researcher shared it to as many students as possible in the online platform which saw the number of questionnaires filled surpass the targeted sample size. The choice was informed by the understanding that the research is mixed and therefore, a bigger sample size will be important in increasing the precision of the research outcome. According to Makridakis *et al.* (2022) larger data samples are important in increasing the accuracy of the reported findings since they increase the results statistical power. The study proceeded to data analysis which is thus presented in the chapter.

Table 4.1.: Response Rate

	Frequency	Percentage
Target sample	354	100%
Response	371	105%

Source: Research Data (2024)

This high response rate was achieved because of using Google Forms which meant that the participants responded to from wherever they were. It was convenient, easy to use and quick.

4.3 Reliability test results

The study sought to test the reliability of the questionnaire using the Cronbach alpha. The results are tabulated below:

Table 4.2. Cronbach Alpha

Components (number of questions)	11
Sum of variances (columns)	15.99786629
Variances total scores (rows)	44.01493599
Cronbach's Alpha	0.700189

Source: Research Data (2024)

The number of components as questions was 11. The sum of variances in the column mean was 15.99787 and the variances for the total scores in the rows was 44.01. The value of the Cronbach alpha was found to be 0.700189. Eleven (11) questions were tested and the sum of the variation in each component from the mean across the data set was 44.01 while that of the mean variations in the columns was 15.99787. The value of the Cronbach alpha calculated from the pilot study was 0.700189 which means the questionnaire met the reliability test. According to Noor *et al.* (2022) a Cronbach value higher than 0.7 falls within the acceptable range. Therefore, the questionnaire was used for this study.

4.4 Demographics

The study sought to establish the demographics of the study sample including year of study, age, faculty and gender. The results are as presented below:

4.4.1. Year of study

The study sought to establish the composition of the sample based on the year of study. The results are tabulated below.

Table 4.3: Demographics

Item	Component	Frequency	Percent
Year	Year 1 semester 2	40	10.90%
	year 2 semester 1	97	26.10%
	year 2 semester 2	81	21.70%
	doing master's thesis/project	151	40.60%
	Total	371	100.00%

Source: Research Data (2024)

The table reflects the findings of the majority of the students, 152, representing 41% were doing their master's thesis. This was followed by students in their year 2 semester 2 who were 81 representing 22%. The members who were in year 2 semester 1 were only 98 which represents 26.5 and those in year 1 semester 2 were 41 representing 11%. This means that most participants in the research were doing their master's thesis which agrees with the arguments of Yu (2021) that most University students take longer to do their master's thesis since it involves a long process consisting of data collection and analysis which takes longer than the course work. While doing the coursework could be easier, the majority of the students take time in the master's thesis each year, making the number larger than for those doing the coursework.

4.4.2. Gender

The study sought to determine the distribution of the sample population based on their gender. The results are presented in the table below:

Table 4.4: Gender

Gender	Frequency	Percent
Female	210	56.6
Male	153	41.3
Prefer not to say	3	0.8
Other	5	1.3
Total	371	100

Source: Research Data (2024)

The findings showed that 210 participants representing 57% were female while 153 participants representing 41% were male. Those who preferred not to say were 3 representing 0.8% while those belonging to other genders were 5 representing 1.3%. This means that there were more female respondents for the research compared to the male. According to Statista (2025) there are more male students enrolled in Kenyan universities for postgraduate studies than females. According to Nuzzo and Deaner (2023) women are less conservative when it comes to taking part in research than males, hence the high number of female respondents for this research. The proportion of the other genders and those who preferred not to say is the least.

4.4.3. Age

The study sought to establish the distribution of the sample population based on their age. The findings are presented in the table below:

Table 4.5: Age Range

Age Range	Frequency	Percent
18-25	58	15.5
26-35	135	36.4
36-45	113	30.5
46-55	65	17.6
Total	371	100.0

Source: Research Data (2024)

The students aged 18-25 years had a frequency of 58 which represents 16% while those aged 26-35 were 135 which is 36%. Those aged 36-45 were 113 representing 31% while those aged 46-55 were 65 which is 18%. This means that the majority of the students pursue their postgraduate courses in the ages of 26-35 and 36-45 years. Based on the current

education systems in Kenya, these are the ideal ages for students who have undergone the Kenyan academic system. According to a study by Mugendi and Githae (2021) most of the students in Kenya enroll on the postgraduate course between 27 and 37 years since they have to establish a financial stream first before self-sponsoring themselves for the postgraduate courses.

4.4.5. Faculty

The study sought to establish the distribution of the students based on the faculty for each of the students. The findings are presented in the table below:

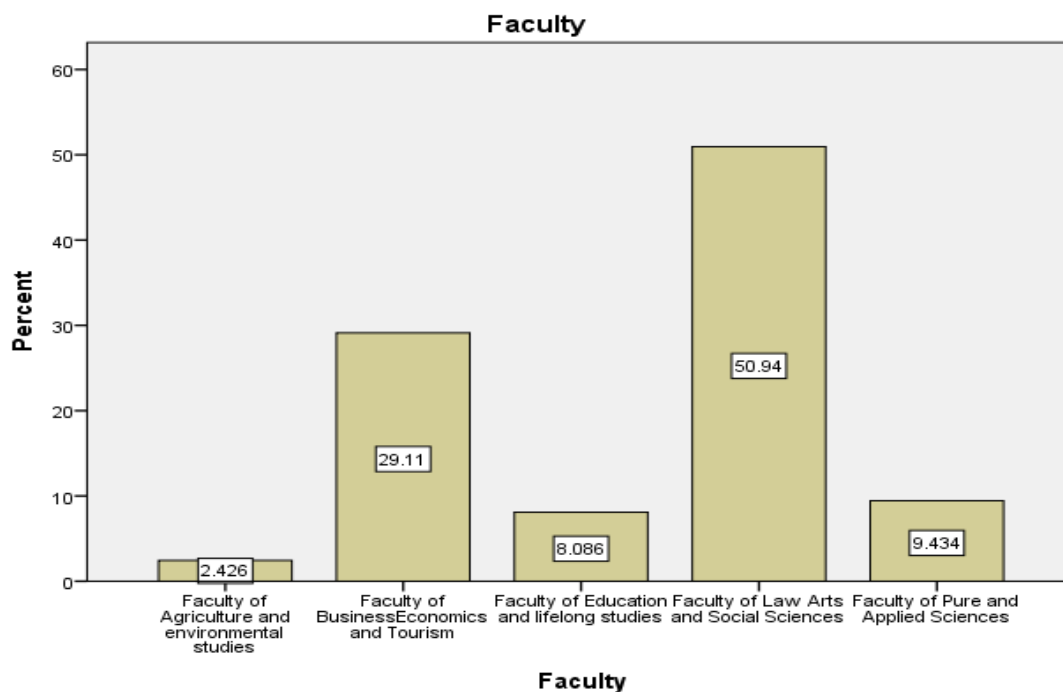


Figure 4.1: Faculty

Source: Research Data (2024)

In the findings, 9 participants (2.4%) were from the School of Agriculture and Environmental Studies (SAES), 108 participants (29.1%) were in the School of Business Economics and Tourism (SOBET), while 30 participants (9.4%) were in the School of Education and Lifelong Learning (SELL). The respondents from the School of Law, Arts and Social Sciences (SLASS) were the majority, forming more than half the entire sample

size at 189 participants (51%). This means that the majority of the students were in the SLASS and also in the SOBET. According to Muthiani *et al.* (2022) the level of enrolment of students at Kenyatta University shows that the highest enrolment is in the School of Business Economics and Tourism followed by the School of Law, Arts, and Social Sciences. The researcher therefore was able to reach out to more students in the two top leading faculty schools in the enrolment than those that had few students based on convenience.

4.5 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:

4.5.1. Frequency of use of LMS

The study sought to determine the frequency of use of LMS including the mean, median, mode, and standard deviation as shown below:

Table 4.7: Frequency of use of LMS

Descriptive aspect	Frequency of LMS use
N	371
Mean	1.6951
Median	2.0000
Mode	2.00
Std. Deviation	.62342

Source: Research Data (2024)

The total number of valid participants was 371. The mean for the frequency of use was 1.6951 and the standard deviation (SD) was 0.62342. The median was 2 and the mode was 2. The mean of 1.6951 means that on average the participants agreed to have been using the LMS weekly while the SD of 0.62342 implies that the highest and the lowest values do not deviate much from the mean such that there are no outliers which indicates the use of the LMS on a weekly basis was agreeable. The mode of 2 means that the majority of the participants said that they used the LMS weekly. 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.

The study sought to determine the percentage of use of the LMS based on their frequency of use. The findings are presented in the table below:

Table 4.8: Frequency of use

Frequency of use	Frequency	Percent
Everyday	144	38.8
Weekly	198	53.5
Monthly	27	7.2
Other	2	.5
Total	371	100.0

Source: Research Data (2024)

The results showed that 144 participants representing 39% used LMS every day while 198 participants representing 54% used LMS weekly those who used it monthly were 27 representing 7.2% while those who used it other times were 2 representing 0.5%. This means that the majority of the participants used the LMS on a weekly basis which 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.

4.5.2. Easy to navigate *Kusoma* LMS

The study sought to establish the descriptive statistics of the ease of navigating the LMS. The findings are presented in the table below:

Table 4.9: Descriptive Statistics

Descriptive aspect	It is easy to navigate <i>Kusoma</i> LMS
N	371
Mean	4.1421
Std. Deviation	.77054

Source: Research Data (2024)

The valid number of respondents was 371, the mean of those who said it is easier to navigate the *Kusoma* LMS was 4.1421 and the SD was 0.77. Since the ease of navigating the LMS was measured on a Likert scale, a mean of 4.1421, the finding is that the participants agreed that it is easy to navigate *Kusoma* LMS. The SD of 0.77 means the highest and lowest value differ slightly from the mean and therefore supports the finding that the participants agreed it is easy to navigate the *Kusoma* LMS. These results agree with the works of Darko (2021) who opined that student with the 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.

On whether it was easy to navigate LMS, the study found that LMS was easy to navigate. The results are presented in the table below:

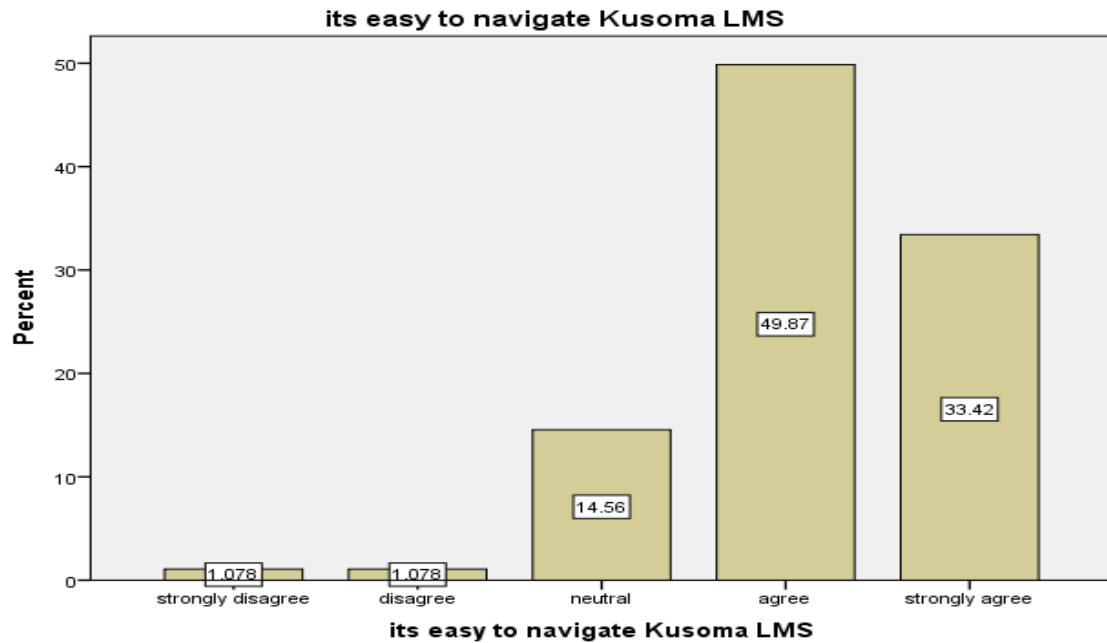


Figure 4.2: Easy to navigate Kusoma LMS

Source: Research Data (2024)

The results showed that 4 participants representing 1% strongly disagreed with LMS being easy to navigate. It was established that 53 participants which is 14.6% were neutral while 186 participants who represent 49.9% of the sample agreed *Kusoma* is easy to navigate while 125 participants representing 33.4% of the sample strongly agreed on *Kusoma* being easy to navigate. This means that most of the students agreed that the LMS is easy to navigate hence aligning with the findings of Darko (2021) who established that an LMS interface with great features on the dashboard complements students’ study experiences.

4.5.3. Features in *Kusoma* LMS perform their function

The study sought to establish whether the features in the *Kusoma* LMS perform their intended functions. The findings are presented in the table below:

Table 4.11: Descriptive aspects

Descriptive aspect	LMS perform the intended functions
N	371
Mean	3.7649
Std. Deviation	.64704

Source: Research Data (2024)

The valid sample size was 371, mean was 3.7649 and the SD was 0.647. The SD of 0.647 means that there was not much deviation from the mean. The mean of 3.76 on a Likert scale means that the participants range from neutral to agreeing that the LMS performs its intended functions. 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.

On how the features in the *Kusoma* LMS performed the intended functions, the respondents indicated their responses as tabulated below:

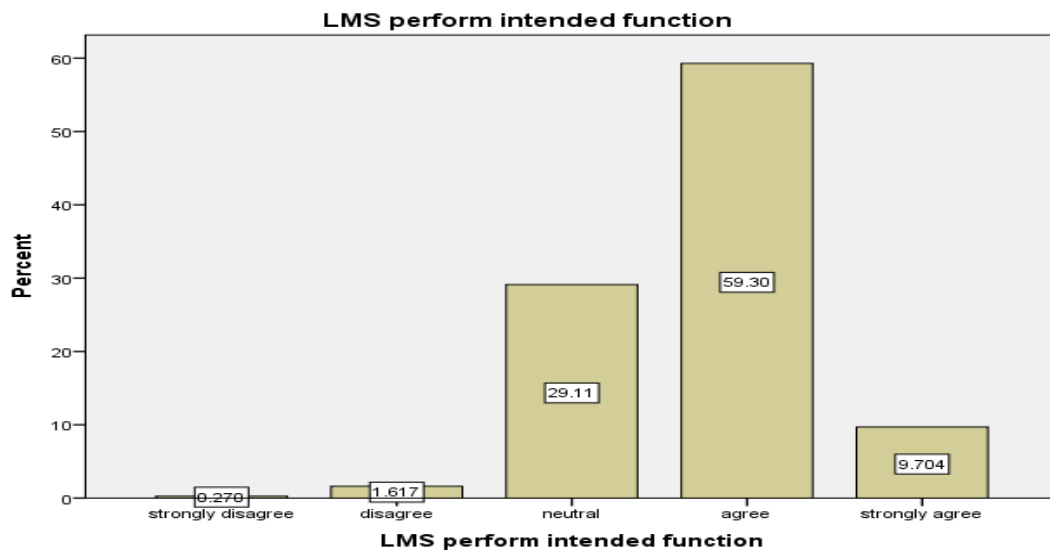


Figure 4.3: LMS performs intended function

Source: Research Data (2024)

The findings show that one person representing 0.3% strongly disagreed, 6 people disagreed representing 1.6% while 108 persons representing 29.1% were neutral. Those who agreed were 220 individuals which is 59% and those who strongly agreed were 36 persons representing 9.7%. Most participants, 59%, agree that the features of LMS do perform the intended functions. This means that the LMS is adequately meeting the intended functions as agreed by the participants. 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.

4.5.4. LMS features are easy to use

The study sought to establish the descriptive statistics for the participants who agreed or disagreed that the LMS features are easy to use. The findings are reported in the table below:

Table 4.13: LMS features are easy to use

Descriptive aspect	LMS features are easy to use
N	371
Mean	3.8915
Std. Deviation	.75399

Source: Research Data (2024)

The valid sample size was 371, mean was 3.8915 and the SD was 0.75399. This means that the standard deviation of 0.75399 shows there was not much variation in the mean. The mean of 3.8915 on a Likert scale means that the participants agree that LMS features are easy to use. The findings align with those of another study by Rizal et al. (2022) who opines

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. This means that the features of LMS are easy to use which makes it possible for the students to access the platform and learning materials with ease hence boosting their learning experience.

An analysis of the percentages of participants who believe the *Kusoma* LMS features are easy to use was done and presented as follows:

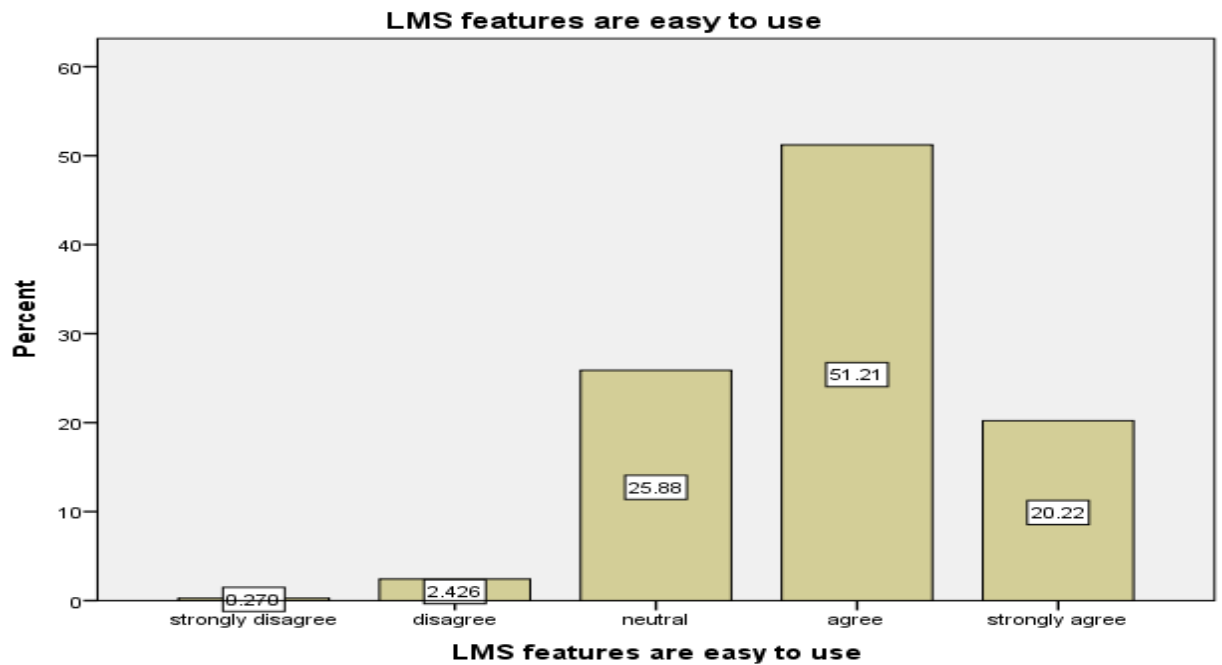


Figure 4.4: LMS features are easy to use

Source: Research Data (2024)

The findings showed that one participant representing 0.3% strongly disagreed that *Kusoma* LMS features are easy to use. 9 people representing 2.4% disagreed while 96 persons representing 25.9% were neutral. Those who agreed were 190 participants which was 51.2% and those who strongly agreed were 76 participants representing 20.2%. This means that the majority of the participants 51.2% and 20.2% agree and strongly agree respectively that the LMS features are easy to use. 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.

4.5.5. LMS enhance the quality of learning

The data was analyzed to determine the descriptive statistics of the participants who responded to the question of LMS enhancing the quality of learning.

Table 4.15: LMS enhance quality of learning

Descriptive aspect	LMS enhance the quality of learning
N	371
Mean	4.1034
Std. Deviation	.67499

Source: Research Data (2024)

The valid sample size was 371, the mean was 4.1034 and the SD of 0.67499. The SD of 0.67499 shows that there is not much deviation from the mean. The mean of 4.1 which is measured on a Likert scale means that the participants agree that the LMS enhances the quality of learning. 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.

The data was analysed to establish the frequencies and percentages of the participants who agreed or disagreed on the LMS enhancing the quality of learning.

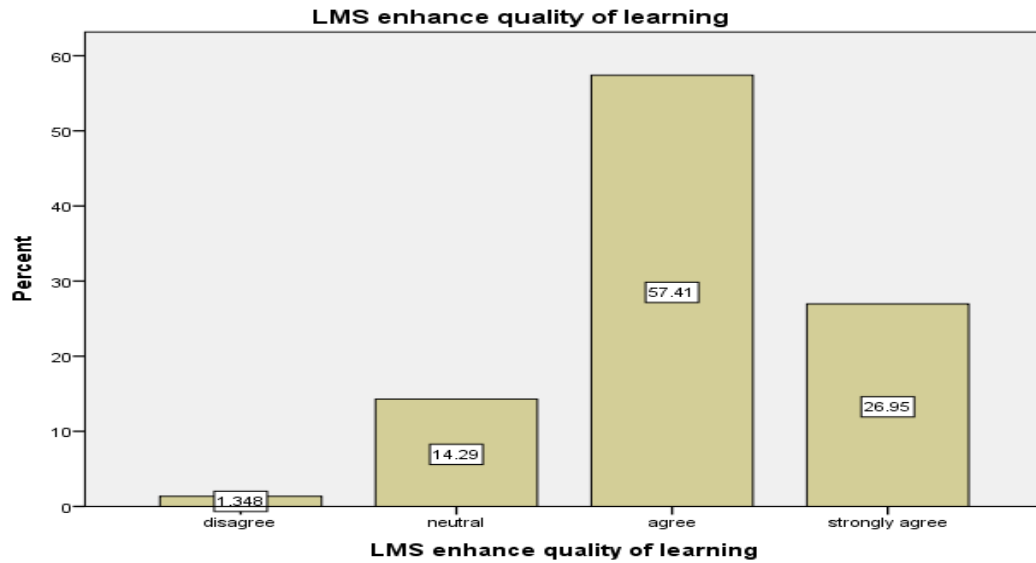


Figure 4.5: LMS enhance quality of learning

Source: Research Data (2024)

The findings showed that no participant strongly disagreed with LMS enhancing the quality of learning. 5 participants representing 1.3% disagreed while 53 participants representing 14.3% were neutral. Those who agreed were 213 participants which is 57.4% and those who strongly agreed were 101 participants representing 27%. This means that the majority of the participants 57.4% and 27% agreed and strongly agreed respectively that the use of *Kusoma* LMS improves the quality of learning. The students therefore have had a positive experience in their learning process using the *Kusoma* LMS. 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.

4.5.6. LMS is accessible on multiple devices

The study sought to establish the descriptive statistics of the participants who responded to the question of whether the LMS is accessible on multiple devices.

Table 4.17: LMS is accessible on multiple devices

Descriptive aspect	LMS is accessible on multiple devices
N	371
Mean	3.9276
Std. Deviation	.81434

Source: Research Data (2024)

The valid sample size was 371, mean was 3.9276 and the SD is 0.81434. The SD of 0.81434 shows that highest and lowest values don't vary much from the mean. The mean of 3.9276 on a Likert scale means that the participants agree that the LMS is accessible on multiple devices. Chan et al. (2021) also established that the LMS design must be compatible with other devices to allow convenient learning for the students.

The study sought to establish the percentages and frequency of participants who agreed and disagreed that the LMS is accessible on multiple devices.

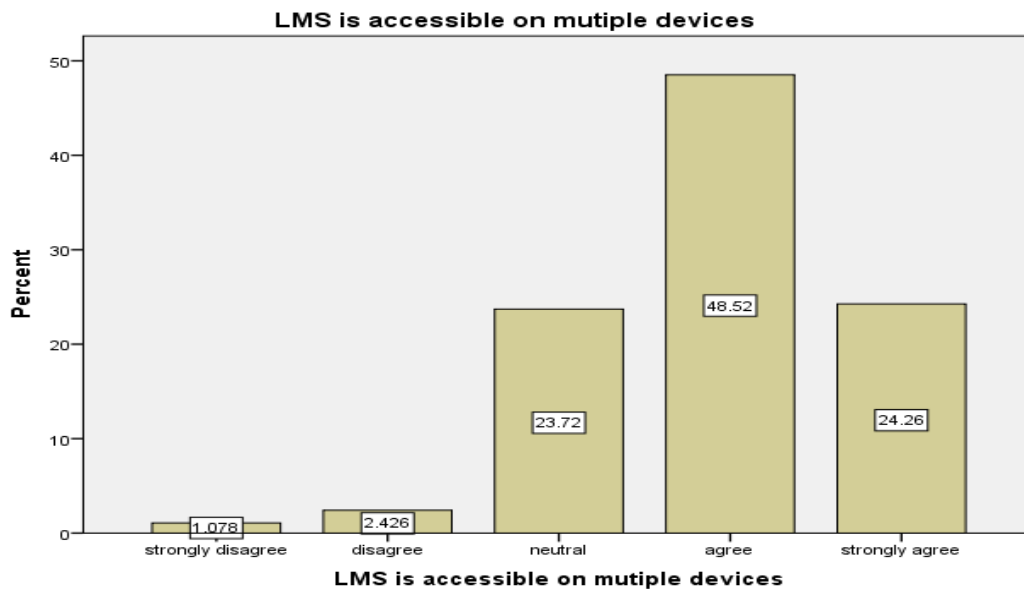


Figure 4.6: LMS is accessible on multiple devices

Source: Research Data (2024)

The findings showed that 5 participants representing 1.1% strongly disagreed that LMS is accessible on multiple devices, 9 participants representing 2.4% disagreed while 88 participants representing 23.7% were neutral. Those who agreed were 180 participants which is 48.5% and those who strongly agreed were 90 participants representing 24.3%. The findings denote most of the participants agree that the LMS is accessible on multiple devices. The students have used the LMS in different devices which increases the user convenience. 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.

4.5.7. LMS makes postgraduate learning easy

The study sought to establish descriptive statistics for the participants who believed that the LMS makes postgraduate learning easy.

Table 4.19: LMS makes postgraduate learning easy

Descriptive aspect	LMS make postgraduate learning easy
N	371
Mean	4.2403
Std. Deviation	.71376

Source: Research Data (2024)

The valid sample size was 371, the mean was 4.24 and the SD of 0.71376. The SD of 0.71376 shows that the values do not vary much from the mean. The mean of 4.24 which is measured on a Likert scale indicates that the participants agree that the LMS makes postgraduate learning easy. 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.

The study sought to establish the frequencies and percentages of participants who agreed and disagreed that LMS makes postgraduate learning easy. The findings are presented in the table below:

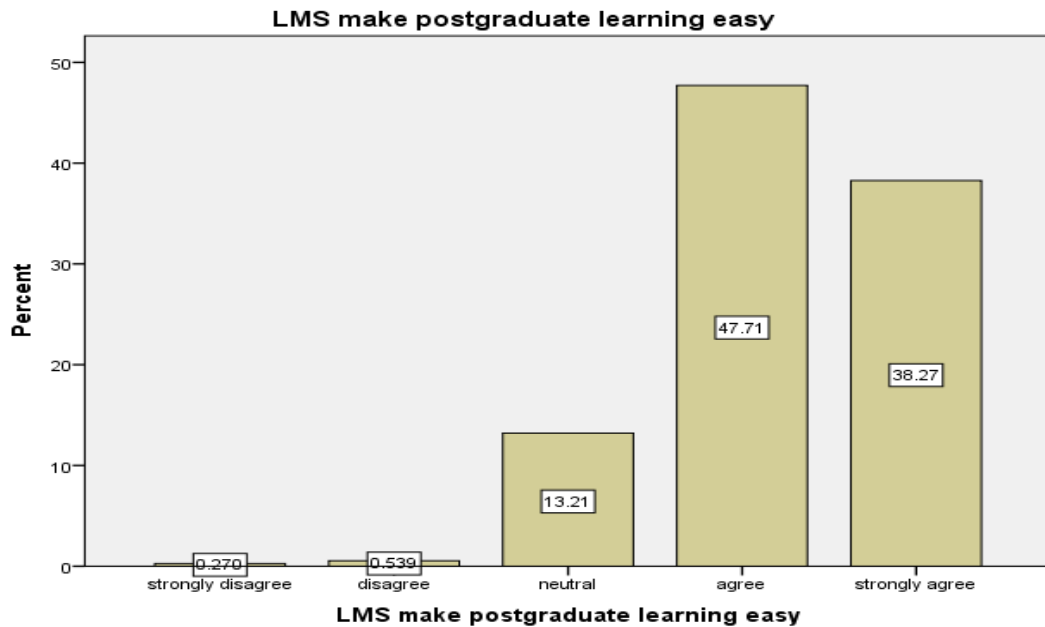


Figure 4.7: LMS make postgraduate learning easy

Source: Research Data (2024)

The findings showed that 1 participant representing 0.3% strongly disagreed that LMS makes postgraduate learning easy, 2 participants representing 0.6% disagreed while 49 participants representing 13.2% were neutral. Those who agreed were 174 participants which is 47% and those who strongly agreed were 145 participants representing 39%. The participants 47.7% and 38.2% agreed and strongly agreed respectively that the use of LMS makes postgraduate learning easy. 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.

4.5.8 Qualitative data

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, some of the respondents stated “*The dashboards are self-navigating The Course or class outlines are also well arranged and easy to access* (Respondent 154)” which means that the ability to self-navigate is a motivating factor towards using LMS. Another respondent also stated “*Dashboard, It shows the course enrolled, courses completed and activities completed and due*” which implies that the students are pleased with the organization of the dashboard providing them with the services they need. Another respondent supported this position stating “*Dashboard is user friendly* (Respondent 327)” while another one added saying “*The dashboard features* (Respondent 173)” also support of this position another one stated “*The assignment and the course material easily accessible from the dashboard* (Respondent 197)” The findings denote that majority of the postgraduate students prefer *Kusoma* LMS since they believe it enhances access to learning components.

In the context of the user interface some of the respondent said “*The navigation that ensures you get what you want* (Respondent 204)” another added “*Navigating through the notes in units posted by lecturers* (Respondent 6)” and another also said “*The interface is very user friendly* (Respondent 92),” This implies that most of the 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. In some of the responses the respondents said:

“*Easy to interact with learners and professors*” (Respondent 78) while another respondent said “*Teachers and students can remotely counsel each other*” (Respondent 107) In the same context another one stated “*the package of learning material and how interaction but different uses are shared*” (Respondent 12) this means 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.

The learning materials present within the LMS also are among the main factors that help in boosting 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. In some of the responses the respondents said: *“One of the features is the accessibility of materials present at a go speed”* (Respondent 51) meaning *Kusoma* LMS makes the resources available at all times. Another one said *“Links to materials that are not available in Kusoma where to find them”* (Respondent 33) meaning when material is not present in the LMS contains external links to a direct source on other websites. Another respondent said *“Tutorial sessions, Kusoma notes, embedded videos and learning”* (Respondent 221) meaning that all content in different forms enhanced their learning. In the same context another respondent added *“It enhances students to access it anywhere when they want to learn the materials.”* (Respondent 313) the implication is that through the engagement of the *Kusoma* LMS the students are able to access valuable learning materials that facilitate learning. The study sought to establish how the use of LMS affects the accessibility of postgraduate learning. The findings are as presented below: Most participants (214) 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. in some of the responses the respondents said:

“You can access the platform and the materials at your convenience; time and place.” (Respondent 104) meaning learning can take place at any place and time since it is conveniently available at *Kusoma*. another respondent said *“makes documents and articles easily accessible”* (Respondent 17) *“Accessibility makes it easier to work on your work anywhere”* (Respondent 311) *“Learning has been facilitated easily and accessible even in remote areas”* (Respondent 193) the implication is that through the use of the LMS program learners find learning easier since they can now access learning at any given point using the content present in the LMS. The implication is that they are encouraged to continue to pursue their studies at will.

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. In some of the responses the respondents said:

“Making learning awesome with ease of access to materials and things that I need.” (Respondent 207) another respondent said *“Easy to use and has not time limit”* (Respondent 311) *“With the availability of all I need Kusoma is reliable source for my decision in whether to study or not depending on how well it works”* (Respondent 93) this means the ability to access learning at one’s convenience is an important factor towards influencing the learning process positively. On the same perspective another respondent said *“Easy to juggle between work and school motivates one to continue with learning”* (Respondent 139) which means that the participant enjoys accessibility of the course online giving them the option of choosing when to work and when to study. This type of convenience helps in ensuring that the students can continue with their operations while at the same time attend to their learning. The study sought to find out the changes related to *Kusoma* that are experienced by the postgraduate students. In the findings it was established that the 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. In their responses some of the respondents said:

“Remote areas network is slow thus access has been limited” (Respondent 2) supporting this another respondent said *“Slow and lagging in remote places where internet coverage is weak”* (Respondent 200) another one supported saying *“Slow connectivity and difficulty in accessing some of the resources, the interface is not friendly”* (Respondent 77) and another stated *“Internet connection might be poor in some areas”* (Respondent 42) this

implies that in some areas access to the internet remains a challenge and therefore the students learning is affected drastically. Other respondents complained of the slow internet connectivity especially in areas where there is internet access which made their experience worse. For instance, some of the respondents said “*Downloads and upload can be slow at times*” (Respondent 371) another said “*the system in most cases is slow and this discourages me from using it*” (Respondent 63) in the same context another respondent stated “*internet connection sometimes leads to slow performance of the LMS*” (Respondent 182). This means that the slow internet being experienced in these areas has been a main setback that limits the experience of the students who seek to pursue the postgraduate courses.

Majority of the respondents (177) agreed that the navigational challenges were among the issues that bottlenecked their experience with the use of *Kusoma* LMS program in their learning. In some of the responses the respondents said: “*Distinguishing assignments due to clogging is messy*” (Respondent 121), “*Can be hard in distinguishing between the old and new materials*” (Respondent 322), “*the system is sometimes slow and clogged*” (Respondent 266) this means that the content present in the region is with different contexts which makes it difficult for one to have access to the resources they need. Navigating and getting the correct documents becomes difficult due to clogging. other respondents to challenge said “*too many assignments present making it difficult for one to figure out which one to be done*” (Respondent 163) another respondent also added to this position stating “*Links shared are not easy to navigate*” (Respondent 17) this means that when one wants to access the different area sit 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 study sought to find out the recommendations of post graduate students on how to solve the functionality problems related to LMS. The results are as presented below:

In the findings it was observed that the need to upgrade 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.

In the context of the system upgrade the complaints about capacity of the LMS, the speed in the performance and also the need to increase its efficiency. In some of the responses the respondents said: *“upgrade the system to a better version that will work effectively in all devices”* (Respondent 1), *“upgrade the system to a later version that performs better than the past systems”* (Respondent 131), *“Provide an updated system with only relevant resources”* (Respondent 375) this means that there is a high demand for a system upgrade to guarantee a high performance of the LMS program which will help in improvement of the experience of the students during the learning process. Through upgrade of the system there will be improved performance, a faster system that will increase convenience and provide the services required more effectively.

The findings also showed that there is need for automation of the systems to perform specific functions without the need for human intervention. In support of these findings the respondents stated: *“Automating the system to ensure unnecessary items are removed and easier access of resources is easy”* (Respondent 291) *“Automate the system to have the courses and assignments removed once the course is completed”* (Respondent 201) *“automate removal of previous assignments once they have been completed”* (Respondent 129) this means that the respondents are facing challenges with the clogging of the system and therefore they need it to be automated for it to perform the intended function. Through the adoption of these recommendations there will be improvement of the experience of students during their learning process.

Another major recommendation is the need to increase the internet speed and also access to the internet. Most respondents (57) stated that there is a need to improve the internet connectivity speed to allow them to have a better experience of the LMS and ensure that the services are provided with the required high quality. In some of the responses the respondents said: *“More network coverage and ease of access”* (Respondent 112) *“Improvement on network and few updates to remove sluggish behaviour on low internet”* (Respondent 299) *“improve the speed of the connection to get quality interaction”*

(Respondent 142) “*The internet service providers need to improve on their network connectivity*” (Respondent 265) the findings from this section imply that the internet connectivity which is slow is one of the factors that discourage the students from using the LMS program conveniently. In this regard one of the main recommendations made is that the internet and the network service providers need to provide the information needed and the quality of the program need to be enhanced to ensure they are performing according to the required standards.

4.6 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.

4.6.1. Motivation

The study sought to determine the descriptive statistics of the participants who agreed or disagreed with the motivation aspect of the LMS and academic optimism. The findings are as reported below:

Table 4.21: Motivation

Descriptive aspect	Kusoma enhances motivation for learning
N	371
Mean	4.2532
Std. Deviation	.70377

Source: Research Data (2024)

The valid sample size was 371 and the mean was 4.2532 and SD was 0.70377. This means that the SD of 0.70377 shows that the values deviate by this margin from the mean. The mean of 4.2532 on a Likert scale means that the participants agree that the LMS enhanced their motivation to pursue postgraduate studies. The findings support those of Daaret al.

(2023) who found that the use of the LMS motivated students to complete their course by improving their learning experience.

The study sought to determine the frequencies and percentages of the respondents on whether the LMS enhanced their motivation to pursue postgraduate studies. The results are as presented in the pie chart below:

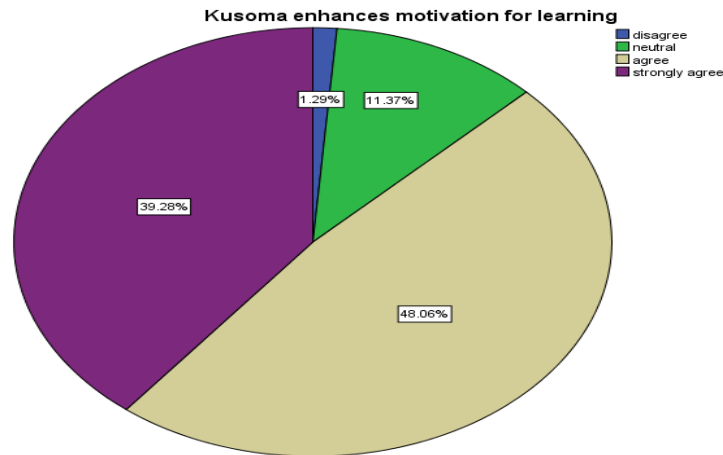


Figure4.9. Kusoma enhances motivation for learning

Source: Research Data (2024)

The pie chart shows that 39.28% of the sample strongly agreed, 48.06% agreed while 11.37% were neutral and 1.29% of the sample disagreed that the use of LMS enhanced their motivation to learn. These findings mean that the majority of the participants 48.06% and 39.28% agreed and strongly agreed respectively that the use of LMS enhances their motivation to learn. This means that when the LMS is used there is an increased motivation to the learning process and students are more willing to pursue postgraduate studies. 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.

4.6.2. LMS encourages me to use it

The study sought to substantiate the descriptive statistics of the participants who agreed or disagreed to LMS, motivating and encouraging them to use it. The results are as presented in the table below.

Table 4.22: LMS encourages me to use it

Descriptive aspect	Kusoma design supports studies sufficiently and encourages its usage
N	371
Mean	3.8372
Std. Deviation	.65725

Source: Research Data (2024)

The valid sample size was 371 and the mean was 3.8372 and SD was 0.65725. The SD of 0.65725 implies that the high and low values differ by this margin from the mean. The mean of 3.8372 which is measured on a Likert scale means that the participants ranged from neutral to agreeing that the LMS has features that encourages them to continue using it. The findings support those of Oguguo *et al.* (2021) who established that the LMS promotes positive attitude and encourages them to continue with the learning process.

The study sought to determine the frequencies and percentages of the respondents on whether the LMS encouraged the students to use it in their postgraduate studies. The results are as presented in the pie chart below:

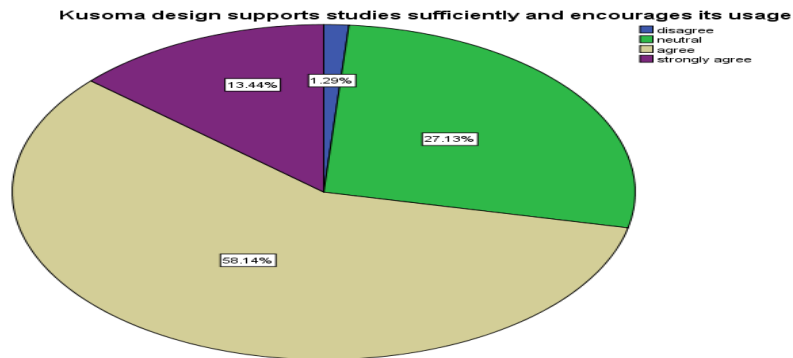


Figure 4.10. *Kusoma* design supports studies and encourages its usage

Source: Research Data (2024)

The pie chart shows that 13.44% of the sample strongly agreed, 58.14% agreed while 27.13% were neutral and 1.29% of the sample disagreed that *Kusoma* LMS design supports learning hence encouraging its usage. 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.

4.6.3. Learning experience

The study sought to present the descriptive statistics of the participants based on the degree to which they agree or disagree on LMS affecting learning experience of postgraduate students. The findings are as presented in the table below:

Table 4.23: Learning experience

Descriptive aspect	<i>Kusoma</i> affects learning experience
N	371
Mean	4.0568
Std. Deviation	.76981

Source: Research Data (2024)

The valid sample size was 371 and the mean was 4.0568 and SD was 0.76981. This means that the SD of 0.76981 shows that the figures do not deviate much from the mean. The mean of 4.0568 on a Likert scale means that the participants agreed that the LMS affects the learning experience of postgraduate students. 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.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed that the *Kusoma* LMS has an effect on their learning experiences. The results are as displayed in the pie chart below:

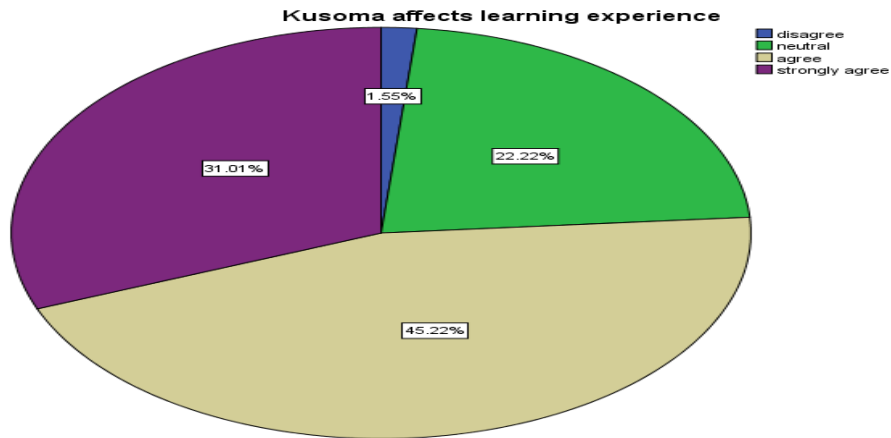


Figure 4.11. *Kusoma* affects learning experience

Source: Research Data (2024)

The pie chart shows that 31.01% of the sample strongly agreed, 45.22% agreed while 22.22% were neutral and 1.55% of the sample disagreed that *Kusoma* LMS design supports learning hence encouraging its usage. This means that the majority of the respondents 31% and 45% strongly agreed and agreed respectively that the use of LMS has a strong design support that encourages its usage among the postgraduate students. 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.

4.6.4. Learning attitude

The study sought to establish descriptive statistics for the students who responded to whether the technical challenges being experienced when using the *Kusoma* LMS has an effect on the students' attitude towards learning. The results are as presented in the table below:

Table 4.24 Learning attitude

Descriptive aspect	technical challenges affecting attitude
N	371
Mean	4.0646
Std. Deviation	.74002

Source: Research Data (2024)

The valid sample size was 371 and the mean was 4.0646 and SD was 0.74. The SD 0.74 shows that the upper and lower values deviate from the mean by this margin. The mean of 4.0646 on a Likert scale means that the participants agreed that the technical challenges present in the LMS affecting the attitude of postgraduate students towards learning. The findings agree with those of Ajijola (2021) who opines that there were statistically significant variation in the attitude of students towards the implementation of LMS learning.

The study sought to find out the frequencies or percentages of the participants' responses regarding technical challenges facing LMS causing a change in attitude of the postgraduate students towards learning. The findings are as presented in the pie chart below:

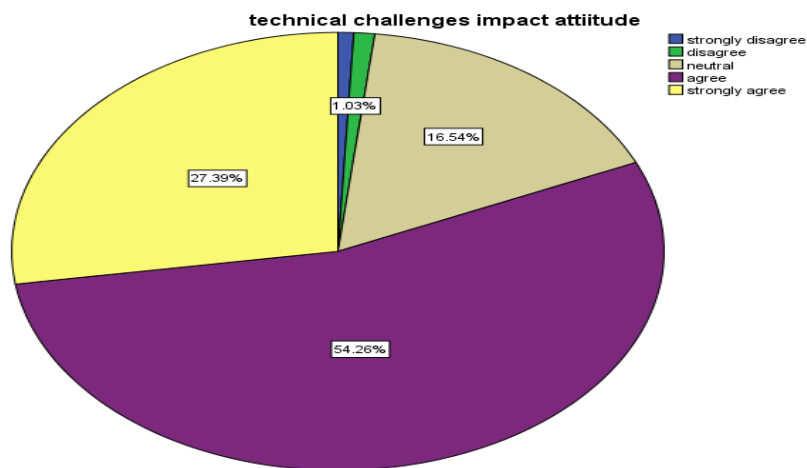


Figure 4.12: Technical challenges impact attitude

Source: Research Data (2024)

The pie chart shows that 27.39% of the sample strongly agreed, 54.26% agreed while 16.54% were neutral and 1.03% of the sample disagreed that technical challenges affect the attitude of the postgraduate students towards learning. This means that the majority of the participants 54.26% and 27.39% agreed and strongly agreed respectively that the technical challenges being experienced by the students when using the LMS program affect the attitudes of the postgraduate students towards learning. The findings align with those of another study by Ajjola (2021) who established that there were statistically significant differences in the attitude of students towards the implementation of LMS learning.

4.6.5. Qualitative data

The study sought to determine how the inclusion of *Kusoma* LMS affects the students' learning experience. The findings of the study are as presented below:

In the results for this study, it was 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 (69) agreed that the learning material provided in the LMS platform is a motivation for them to engage in the learning process. In some of the responses in support of this position the respondents said: *“Give material to students enhancing their learning”* (Respondent 7) another respondent said *“Kusoma is a go to where you need all your study material making school life fun.”* (Respondent 337) and another respondent also said *“It affects the ease with which I am able to get learning materials”* (Respondent 344) the findings imply that the *Kusoma* LMS program provides access to many learning materials which are a motivating factor towards students learning thus making the experience positive.

Majority of the respondents (85) agreed that LMS offered a convenient learning that had a positive effect on their learning process. In some of the responses the respondents said: *“It is ready to use support for career choice navigation easily.”* (Respondent 221) meaning they find it convenient and supporting. Another respondent added *“Has made the learning*

easy due to access of students materials” (Respondent 327) Meaning there is a convenient access to the learning material. Another respondent also said *“I can be able to study at my convenience”* (Respondent 24) while another respondent also said: *“making learning awesome with ease of access to materials and things that I need.”* (Respondent 107) In addition 89 participants said that the *Kusoma* LMS has provided a positive effect to 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.

The study sought to determine how using *Kusoma* LMS affects the motivation to pursue postgraduate studies. The findings are as presented below: Majority of the participants (151) agreed that convenience offered by the LMS is a main motivating factor that led to their urge to engage in the postgraduate studies. Others (72) 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. In some of the responses the respondents said: *“Availability of learning resources motivates me to pursue more.”* (Respondent 1) Meaning the resources are a motivating factor. Another respondent said, *“Availability of resources improves education needs”* (Respondent 122). Meaning accessibility of resources makes them want to learn more. Another one said *“Access again raises the need to seek more knowledge”* (Respondent 271) and another one added *“The use of Kusoma has helped achieve a lot since materials are easier to access. Making reading easy”* (Respondent 369). Meaning *Kusoma* has facilitated their learning. Another respondent responding to the same situation said *“Learning had been made easy to a point seeking further education has been eased”* (Respondent 277). 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 some of the responses, the respondents said: *“It encourages one to continue with studies even when far”* (Respondent 269). Another respondent said *“Convenience is*

key for postgraduate students. Being someone with busy schedules at work and family, I need/needed something that adapted to my situation. Kusoma did it” (Respondent 27). This means it is easy for them to access the material conveniently hence allowing them to strike a balance in their duties and studying. Another respondent added saying *“By enabling online learning and no need to be physically present in the lecture hall and the convenience of my time management”* (Respondent 131). Meaning it is easier to attend online learning than physical classroom setting. Another respondent also said *“Go to a class that can be accessed remotely”* (Respondent 47). Meaning that they find it motivating since they can access the course on an online platform without having to go to the learning institution.

The study sought to establish whether the challenges faced with the LMS affects the attitudes of the students towards learning. The findings are as reported below: The findings showed that the 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.

“Some assignments are timed and sometimes have deadlines and this affects students who are not tech savvy” (Respondent 302). Meaning students without proper navigation skills are discouraged from learning. Another respondent said *“An error in the Kusoma platform prevents students from accessing their course content and therefore negatively affects the performance of students”* (Respondent 47). This implies that technical challenge will hinder the student from accessing the content hence discouraging their learning. Another respondent supported saying *“it’s embarrassing and makes learning difficult”* (Respondent 112) which shows that when there are technical challenges experienced in the *Kusoma* LMS students' learning experience is affected leading to negative attitude. Another respondent also added *“When I was not able to access Kusoma platform, I felt demoralized”* (Respondent 314). This means that the need to access learning is important however when *Kusoma* is facing challenges students are likely to be discouraged from learning. Another respondent also stated *“It slows my progress in ensuring timeliness and submission of assignments”* (Respondent 340). Meaning that technical challenges are likely to promote negative energy among the students.

The network challenges also emerged as part of the main factors that discourage the students from learning leading to a serious setback to most students. In some of the responses the respondents said *“Poor Internet network may discourage learning among postgraduate students”* (Respondent 17). While another one said *“Lack of data and also internet makes learning hard”* (Respondent 79) and another said *“Poor network can make one sad and discourages learning”* (Respondent 177). This means that when the 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.

The findings also showed that the 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. In some of the responses the respondents said *“Reading is fun when everything runs smoothly if no one wishes to quit”* (Respondent 249). This means there is lack of motivation in the learning process when there are challenges. Another respondent said *“Sometimes it’s slow so it reduces the interest to read”* (Respondent 134) which also implies loss of morale. The position is supported by another respondent who also said *“Interest in reading can be lost at times”* (Respondent 157) in the same context another respondent said *“Technical challenges bring down the level of morale needed to go further in studying”* (Respondent 292). Based on the findings from this section it is evident that when the LMS is facing challenges there is a reduced motivation for the students which also affecting their attitude towards learning. The study sought to establish the main solution proposals by the participants to solve the impending technical challenges being experienced with *Kusoma* LMS. The findings are as presented below:

The majority of the participants (92) agreed 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. In some of the responses the respondents said:

“Increase the quantity of materials present in the platform and improve the interaction between the students for effective sharing of information” (Respondent 11). Meaning the platform needs to be more engaging. Another respondent said *“Posting more interactive and educative materials for students to use”* (Respondent 86). Meaning more materials provide a better experience. Another one said *“By adding more necessary materials.”* (Respondent 192) and another one added that *“System performance should be having access to more materials that enhance students learning”* (Respondent 107) when contributing to this position another respondent also said *“Putting new materials and other resources that ensure students success in their work”* (Respondent 131). The implication is that the use of the LMS can be boosted through the inclusion of more quantity and materials making them available for the students to learn more. 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*. Some of the respondents said:

“The system needs to be upgraded to become more effective in executing its mandate” (Respondent 117) another respondent said *“Ensuring smooth Operation of the system”* (Respondent 44) Another respondent also added *“Ensuring all is well and maintenance upgrade are serving all students”* (Respondent 319) Meaning that they all propose an upgrade of the system to have one that does not have many challenges. In the same context another respondent said *“Getting a better system that does not have minor challenges”* (Respondent 354) and another respondent said *“Making regular updates that enhance performance”* (Respondent198). Based on the findings from this section it is evident that the *Kusoma* LMS needs to be upgraded into a newer version which will have less challenges and provide a positive effect on the students.

Majority of the respondents agreed 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. In some of the responses the respondents said:

“Provide education and training to students on how to use the LMS” (Respondent 177). Another said *“Ensuring that each student is able to use Kusoma”* (Respondent 247) and another respondent said *“making sure that they are aware of the positive impact of using Kusoma by making it less technological errors”* (Respondent 144). Another respondent also added to this statement saying *“More training on students on how to use it.”* (Respondent 302). Based on the findings from this section it is evident that the provision of training is one of the main challenges that will impart knowledge and allow all students and teachers to be aware of the use of the program and improve their experiences. 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. In the responses some of the respondents said:

“Making sure Kusoma does not have technical challenges and someone in station to ensure they mitigate such issues immediately” (Respondent 371) meaning they need the problems to be solved as a priority. Another respondent said *“mitigation of errors that are related to performance of Kusoma”* (Respondent 301) Another respondent said *“Less technical challenges more working platform”* (Respondent 129) while another said: *“Ensure minimal disruption of the entire system”* (Respondent 13). 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.

4.6.6. Inferential statistics

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

The study sought to determine the proportion of changes in the academic optimism that can be explained by the use of the LMS. The findings are as reported in the model summary table below:

Table 4.25: Model summary

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

Source: Research Data (2024)

Based on the table the value of R is given as 0.29 while R square is 0.085 and adjusted R square is 0.076 while the standard error of the estimate is 0.59936. The R value of 0.292 is closer to zero which means that the relationship between LMS and academic optimism measures (motivation, learning experience and student's attitude) is a weak positive correlation. The R square value of 0.085 means that only 8.5% of the changes in academic optimism can be explained by the use of LMS. An adjusted R square value of 0.076 means that the nature of the relationship remains weak even after consideration of all the predictors. The standard error of the estimate of 0.59936 is low meaning that there is a higher standard of accuracy in the predictive model. The conclusion therefore is made based on the values of R and R square and this shows a weak relationship since only 8.5% of the relationship between the Use of LMS and the measures of academic optimism.

Analysis of Variance (ANOVA)

The study determined whether the results of the regression model were statistically significant which was determined using the analysis of variance (ANOVA) test and the results are as presented below:

Table 4.26: ANOVA

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			

Source: Research Data (2024)

The ANOVA table shows that the sum of squares for the regression is 12.792 and the residual value is 137.229. The total sum of squares was 150.021. In the degrees of freedom df for the regression is 4 while that of the residual value is 367 and that for the total was 371. The F value at (4,367) is given as 8.902 and the p value is 0.00 implying that the LMS and the academic optimism is statistically significance since P value (0.000) is less than the level of significance (0.05). It also shows that LMS explains the changes in the academic optimism indicators including motivation, learning experience and students' attitude.

Regression coefficients

The study sought to establish how each of the measures of academic optimism (motivation, learning experience and student's attitude) were affected by the use of LMS using a regression analysis. The findings of the section are as reported in the table below:

Table 4.27: 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

Source: Research Data (2024)

In the unstandardized coefficients column, the constant coefficient is 4.47 (standard error 0.262) which is also the y intercept. The coefficient for *Kusoma* enhancing motivation for learning is 0.223 (standard error 0.049) and that for *Kusoma* design supporting studies and encouraging its use is -0.16 (standard error 0.049), the coefficient for *Kusoma* affecting learning experience is 0.062 (Standard error 0.046) a technical challenge affecting the students' attitude is 0.024 (standard error 0.044). In the standardized coefficient table, it is evident that the values for the coefficients are 0.252 for motivation, for *Kusoma* encouraging its usage -0.016, for the learning experience 0.76 and for the learning attitude

0.028. The t values recorded as 17.089 for the constant 4.524 for the motivation, -0.317 for encouraging its usage, 1.351 for the learning experience and 0.543 for the student's attitude. The p value was recorded as 0.000 for the constant and motivation. 0.041 for encouraging learning, 0.008 for learning experience and 0.587 for student's attitudes.

In the understanding of the results the coefficient table shows that there is a positive value of 4.47 which means that this is the y intercept that moderates the relationship. Considering the p value, it was found that the value is statistically significant to the relationship hence has a sufficient response to the relationship. The coefficient for *Kusoma* enhancing the motivation for learning was obtained to be a positive value of 0.223 and the p value for the relationship was found to be 0.00 which means that it is also statistically significant. This means that there is a positive relationship between the use of LMS and the motivation for the students to learn. This means that as the learning institutions continue to invest in the LMS there is a corresponding increase in the motivation of the students to engage in their academics. 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 coefficient -0.016 and a p value of 0.041 were obtained on the relationship between LMS and whether *Kusoma* design supports studies sufficiently and encourages its usage. This means that there is a negative relationship between the variables such that the use of LMS features did not encourage the students' learning. The relationship was also found to be statistically significant with the p value of 0.041 being less than the significance level 0.05. 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.

In the consideration of whether *Kusoma* LMS affects postgraduate learning experience in Ku, the findings showed that there was a positive coefficient 0.062 and a p value of 0.008

which means that the relationship is statistically significant. The findings conclude a positive correlation between the learning experience and use of LMS. The findings are supported by the results of another study by Daar *et al.* (2023) who found that the use of the LMS motivated students to complete their course through an improved experience.

In the determination of whether the technical challenges affected the student's attitude towards the use of LMS the findings showed a positive correlation where the coefficient obtained was 0.024. The findings however were not statistically significant p value 0.0583 which means that the effects of the LMS use on student's attitude 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.

4.7 LMS and course completion

The study sought to determine how the use of LMS affects the rate of course completion. Specifically, the variables measured include the number of postgraduate dropouts, support on work life balance, streamlining of postgraduate courses, increasing postgraduate performance having sufficient backend support and the technical challenges affecting the *Kusoma* LMS. The findings are as presented below:

4.7.1. LMS effect on number of postgraduate dropouts

The study sought to establish the descriptive statistics of the participants who agreed or disagreed with the effect of LMS on the number of postgraduate dropouts. The findings are as shown in the table below.

Table 4.28: LMS effect on number of postgraduate dropouts

Descriptive aspect	LMS affect number of postgraduate dropouts
N	371
Mean	4.0258
Std. Deviation	.96539

Source: Research Data (2024)

The total valid number of participants was 371, the mean of the responses was 4.0258 and the standard deviation was 0.96539. This means that the SD of 0.96539 shows that there is not much deviation from the mean. The mean of 4.03258 on a Likert scale means that the participants agree that the LMS affects the number of postgraduate dropouts. These findings are supported by those of Tamada, Giusti, and Netto (2022) who found that the probability of students dropping out of school when they are using the LMS learning is lower due to the flexibility provided by the LMS.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed on the LMS effects on the number of postgraduate dropouts. The findings are as presented in the pie chart below:

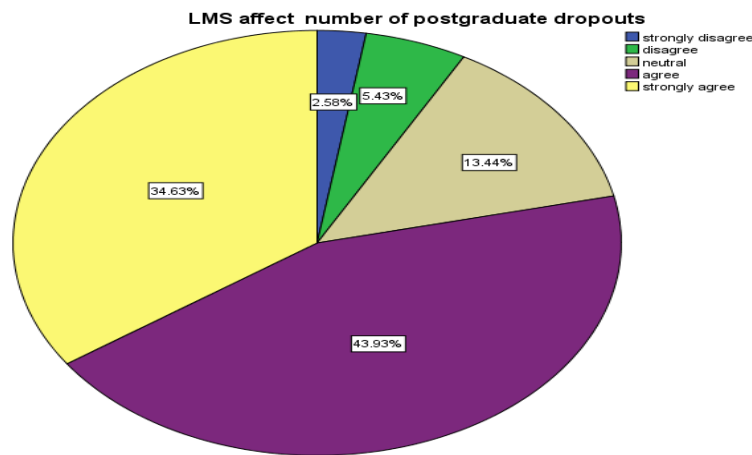


Figure 4.13: LMS affect the number of postgraduate dropouts

Source: Research Data (2024)

The findings showed that 44% of the respondents agreed that the use of LMS affects the number of postgraduate dropouts in schools while 35% strongly agreed that the number of postgraduate dropouts is also affected on by the use of LMS, 13% were neutral while 5% and 3% disagreed and strongly disagreed. This means that the majority of the participants 44% and 35% agreed and strongly agreed respectively that LMS affects the number of postgraduate dropouts. The findings are in alignment with those of Tamada, Giusti, and Netto (2022) who found that the probability of students dropping out of school when they are using the LMS learning is lower due to the flexibility provided by the LMS. The findings are also supported by those of Seo, Kim, and Ju (2021) who opines that there exists a negative relationship between age, utilization of LMS and students' dropout rate. This means that the LMS reduced the number of students dropouts from schools.

4.7.2. LMS support work-life balance

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that LMS supported work-life balance. The findings are as shown in the table below.

Table 4.29: LMS support work-life balance

Descriptive aspect	LMS support work life balance
N	371
Mean	3.6176
Std. Deviation	.76076

Source: Research Data (2024)

The total valid number of participants was 371; the mean of the responses was 3.6176 and SD was 0.76076. This means that the SD of 0.76076 shows that there is not much deviation from the mean. The mean of 3.6176 on a Likert scale means that the participants are neutral or agree that the LMS supports work-life balance. These findings agree with those of Bauwens et al. (2020) who also found that when the teachers engaged the LMS, it allowed them the freedom to have a work-life balance by scheduling activities based on their convenient times.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed with the statement that LMS supports work life balance. The findings are as presented in the pie chart below:

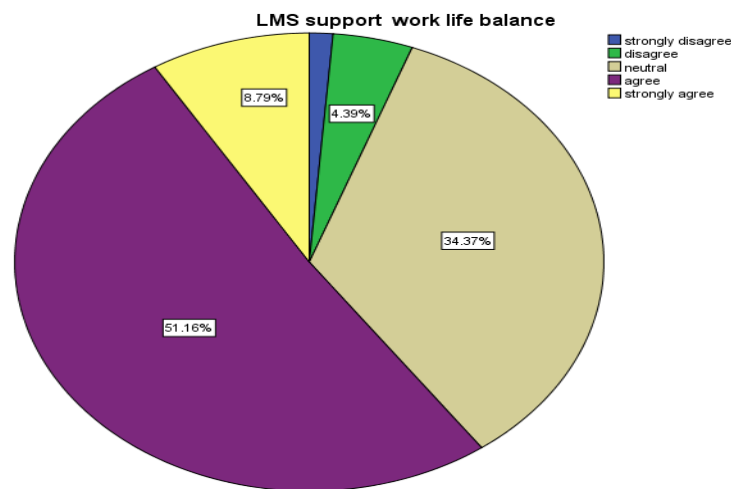


Figure 4.14: LMS support work-life balance

Source: Research Data (2024)

Majority of the respondents (51%) of the respondents agreed that the LMS use promotes a work life balance while 9% strongly agreed to the situation. It was established that 34% were neutral while 4% disagreed on the LMS providing a work life balance. This means majority (51%) of the participants agreed that the use of LMS promotes work life balance. The findings of the study are supported by those of Bauwens et al. (2020) who opines that when the teachers engaged the LMS, it allowed them the freedom to have a work-life balance by scheduling activities based on their convenient times. It was however

established that a significant proportion 34% of the sample were neutral about whether the LMS provided the work life balance which indicates the KU LMS might need to be revamped. Nonetheless the proportion that agreed is more than 50% which provides a basis for a satisfactory conclusion that the LMS promotes work life balance.

4.7.3. LMS streamlines postgraduate course

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that LMS streamlines postgraduate course. The findings are as shown in the table below:

Table 4.30 LMS streamlines postgraduate course

Descriptive aspect	LMS streamline postgraduate course
N	371
Mean	4.0026
Std. Deviation	.77023

Source: Research Data (2024)

The total valid number of participants was 371; the mean of the responses was 4.0026 and the standard deviation was 0.77023. This means that the standard deviation of 0.77023 shows that there is not much deviation from the mean. The mean of 4.0026 which is measured on a Likert scale means that the participants agree that the LMS streamlines postgraduate courses. These findings agree with those of Chan et al. (2021) who found that the LMS is made with special features that help in the organization of the postgraduate courses and other courses incorporating all the needs of the student within the same program. The study also supports the findings of Strakos et al. (2023) who established that the courses in most LMS's are organized based on weeks hence a high likelihood that students will consider using the LMS at least once a week. Meaning the courses are well organized within the LMS to make learning effective.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed on the LMS streamlining postgraduate courses. The findings are as presented in the pie chart below:

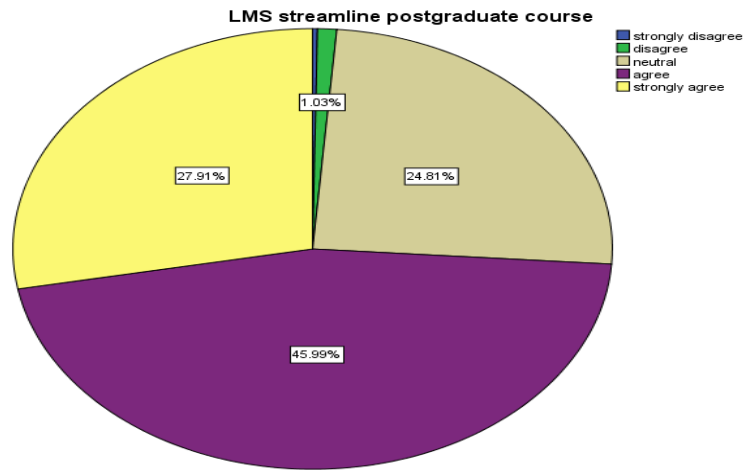


Figure 4.15: LMS streamline postgraduate courses

Source: Research Data (2024)

In the findings 46% agreed that the use of LMS streamlines postgraduate course. In the same context 28% also strongly agreed and 25% were neutral. A negligible proportion 1% comprised the individuals who disagreed and strongly disagreed. This means that the majority 46% and 28% agreed and strongly agreed that LMS streamlines the postgraduate course. The postgraduate courses are therefore well organized and provide the best experience for the students. The findings agree with those of another study by Strakos *et al.* (2023) who also states that the courses in most LMS's are organized based on weeks hence a high likelihood that students will consider using the LMS at least once a week.

4.7.4. LMS increases postgraduate performance

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that LMS increases postgraduate performance. The findings are as shown in the table below:

Table 4.31: LMS increases postgraduate performance

Descriptive aspect	LMS increases postgraduate performance
N	371
Mean	3.9432
Std. Deviation	.71030

Source: Research Data (2024)

The total valid number of participants was 371; the was 3.9432 and the SD was 0.71030. This means that the SD of 0.71030 shows that the values slightly deviate from the mean. The mean of 3.9432 on a Likert scale means that the participants agree that the LMS increases postgraduate performance. The findings are supported by those of Darko (2021) who also found that the students with the ease of using the blackboard had a better performance. The findings also contribute to the work of Razali *et al.* (2022) whose findings 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 sought to find out the frequencies and percentages of the participants who agreed and disagreed on the LMS increasing postgraduate performance. The findings are as presented in the pie chart below:

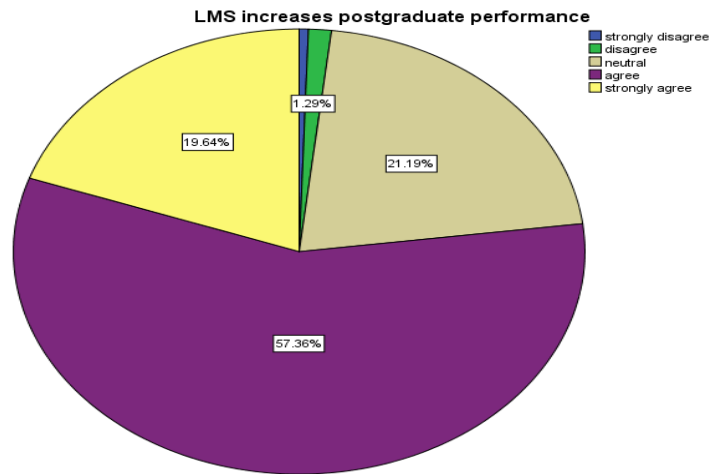


Figure 4.16: LMS increase postgraduate performance

Source: Research Data (2024)

The findings shows that 57% of the sample agreed that the LMS increases postgraduate performance while 20% strongly agreed, 21% of the sample were neutral while those who disagreed and strongly disagreed were also 1%. This means that the majority of the sample 57% agreed that the LMS increased the performance of the postgraduate students. The proportion that strongly agreed is also significant at 20%. The findings conclude that the participants said that the use of LMS increases the performance of postgraduate students. These results agree with those of Razali *et al.* (2022) whose findings 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.

4.7.5. Kusoma MS has sufficient backend support

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that LMS has sufficient back-end support. The findings are as shown in the table below:

Table 4.32: Kusoma MS has sufficient backend support

Descriptive aspect	Kusoma has sufficient backend support
N	371
Mean	3.9173
Std. Deviation	.85980

Source: Research Data (2024)

The total valid number of participants was 371; the mean was 3.9173 and SD was 0.85980. This means that the SD of 0.85980 shows that there is a slight deviation from the mean. The mean of 3.9173 on a Likert scale means that the participants agree that the LMS has sufficient backend support. The findings agree with those of Supriya *et al.* (2024) who opines that students need to be given the appropriate support to navigate the LMS for the LMS to be effective in meeting the intended needs.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed with the statement that LMS has sufficient backend support service. The findings are as presented in the pie chart below:

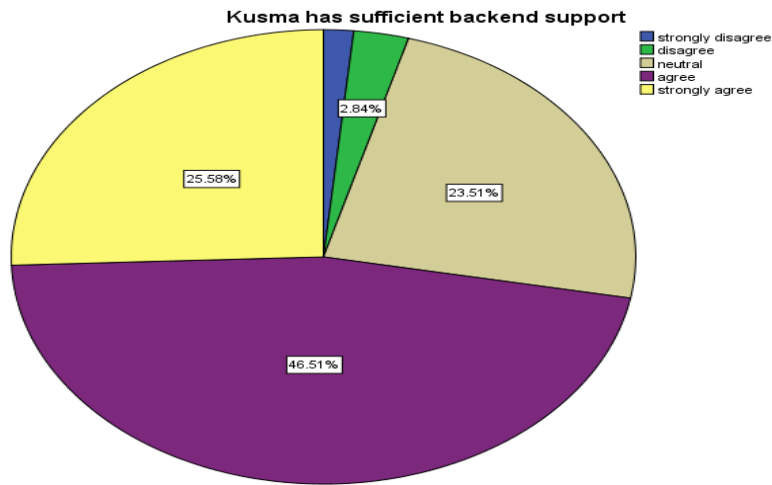


Figure 4.17: *Kusoma* has sufficient back-end support

Source: Research Data (2024)

The findings shows that 47% of the sample agreed that *Kusoma* has sufficient back-end support while 26% strongly agreed, 24% were neutral while 3% disagreed. This means that the majority of the participants 47% and 26% agreed and strongly agreed that the *Kusoma* has sufficient back-end support that improves their experience. This study concluded that *Kusoma* LMS has sufficient back-end support that ensures the students have the best learning experience. The findings agree with those of Supriya *et al.* (2024) who also found that students need to be given the appropriate support to navigate the LMS for the LMS to be effective in meeting the intended needs.

4.7.6. Technical challenges affecting postgraduate performance

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that technical challenges affect postgraduate performance. The findings are as shown in the table below:

Table 4.33: Technical challenges affecting postgraduate performance

Descriptive aspect	technical challenges affect postgraduate performance
N	371
Mean	4.0258
Std. Deviation	.86639

Source: Research Data (2024)

The total valid number of participants was 371; the mean was 3.9432 and the SD was 0.71030. This means that the SD of 0.71030 shows that there is not much deviation from the mean. The mean of 3.9432 on a Likert scale means that the participants agree that technical challenges affect postgraduate performance. Razali *et al.* (2022) also found that there is a positive relationship between the ease of accessibility of the LMS and students' performance in the higher education system.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed with the statement that technical challenges with the LMS affects the performance of postgraduate students. The findings are as presented in the pie chart below:

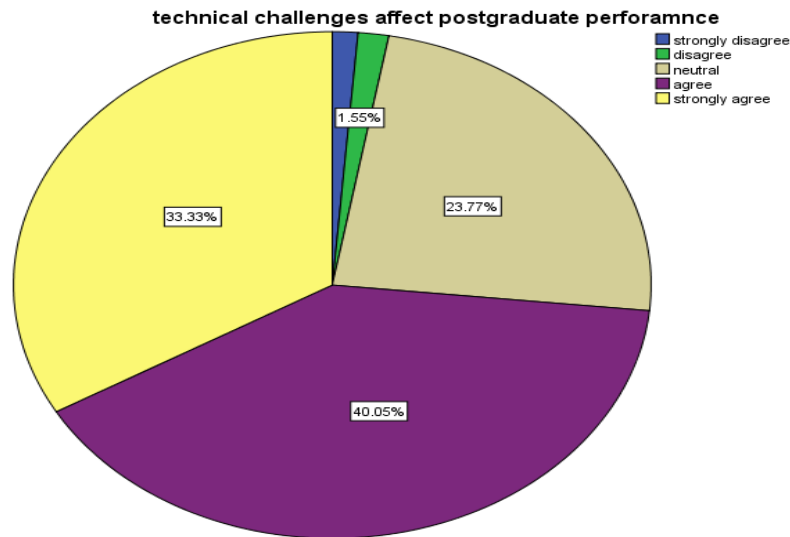


Figure 4.18: Technical challenges affect postgraduate performance

Source: Research Data (2024)

From the findings it is evident that 48% of the sample agreed that *Kusoma* enhances motivation for learning among the postgraduate students while 39% strongly agreed. The neutral proportion was 11% while 1% disagreed. This means that the majority of the participants 48% and 39% agreed and strongly agreed respectively that *Kusoma* motivates learning among postgraduate students. This study concluded that the LMS helps in improving the motivation for learning among the postgraduate students. The findings agree with those of Razali *et al.* (2022) who also found that there is a strong correlation between the ease of accessibility of the LMS and the performance of the students in the higher education system.

4.7.7. Qualitative data

The study sought to find out the effect of *Kusoma* LMS on the number of postgraduate dropouts in Kenyatta University. The findings are as presented below:

Majority of the participants (177) stated that the number of postgraduate student's dropouts has been reduced following the inclusion of the LMS program in learning. The students are involved in some of the learning activities conveniently which reduces the potential of dropping out of school due to inability to access the learning institution. In some of the

responses the respondents said: *“Has a positive impact where postgraduate students are motivated to study more by Kusoma effectiveness”* (Respondent 186). This means that the use of LMS based learning promotes a positive effect on the students and boosts their motivation hence less likelihood to drop out of school. Another respondent stated *“By providing real-time working solutions for those who need to pursue another education level”* (Respondent 333). This means that it brings education closer to the students encouraging them to enroll into the program. Another respondent also said *“I believe that LMS makes learning easier and therefore reduces the number of students who drop out of their studies due to lack of time. LMS being readily accessible enables students to study seamlessly without having to physically attend classes”* (Respondent 214). Meaning the number of dropouts reduces due to the convenience offered by LMS. Another respondent also added stating that *“It is a reliable platform that attracts interest from students with this ascertaining commitment”* (Respondent 272). This means that the students are attracted to the fact that the education system has been made easier and they can now undertake their learning online and conveniently which increases their urge to seek education leading to a reduced number of dropouts. The study sought to find out the effect of the technical challenges being experienced by the students on the number of dropouts. The findings are as reported below:

The findings of the current study showed that there are some students who are not privileged and might end up dropping out of school due to the introduction of the LMS program. Specifically, among the reasons found for students’ dropouts increasing included the lack of feelings that makes the student to be locked out during registration, lack of sufficient knowledge to run and use the LMS program and others had technical reasons that led to their inability to continue learning using the LMS program. In support of this position some of the respondents said:

“The system increases the number of dropouts by locking people out of the course” (Respondent 172). Meaning some students are locked out and are likely to drop out of school. Another said *“Administration of exams on-line failed and led to many students dropping out”* (Respondent 228) which means that some features or functionalities fail

making it difficult for one to continue. Another respondent also added *“Most students are locked out of the system for some reason such as not being able to register on time or even having not paid school fees in time leading to a high number of dropouts”* (Respondent 299). This means that there is a high tendency of the LMS program to lock out students for having met certain characteristics.

In the findings it was also discovered that some students who lack the skills on how to navigate the LMS program are also likely to drop out of school. In some of the responses the respondents said *“Can undermine moral and of those not computer literate”* (Respondent 115). Meaning individuals without the skills to use LMS are disadvantaged. Another respondent also said *“Can be a hurdle to those who don't know how to operate”* (Respondent 291). Meaning that the system will be a challenge to people without skills. Emphasizing on this point another respondent said *“It stigmatizes those who are not tech savvy”* (Respondent 354). Meaning individuals who are not into technology matters will be left out. The implication is that while the system is good and can be used to reduce the number of dropouts there is need for care in the implementation to ensure all persons are included and reduce the potential for discriminating against others. The study sought to determine the students' recommendations for solving the technical problems identified with *Kusoma*. The findings are as presented below:

Majority of the respondents (150) agreed that there is a need for a system upgrade to expand its capacity and improve the user interface as one of the methods to overcome the identified technical challenges. In some of the responses the respondents said: *“Improve the system once in a while to accommodate new changes happening”* (Respondent 128). Meaning there is need to increase the capacity of the LMS. Another respondent supported saying *“expand the system's capacity and upgrade to reduce hanging”* (Respondent 211) which implies that the small capacity is the main challenge leading to the system hanging. Another respondent said *“Ensure the system is up to date and working fine always”* (Respondent 291). Meaning that there is need for a system upgrade to make it more functional. Adding to this another respondent said *“the system needs to be upgraded to provide all required resources within a short period”* (Respondent 96) and another said *“update the systems*

making them easy to work in multiple devices Kusoma at times is hard to navigate the challenges and having an option should be looked at” (Respondent 312). Meaning there is a need to change the interface and make it easy to navigate. This was supported by another respondent who said *“Make the interface easy to access and network fixing”* (Respondent 370). Based on these findings, it is evident that there is a need for an upgrade of the LMS system to make it perform better and provide exceptional services to the students.

Majority of the respondents (151) also agreed that the provision of internet support and technical support are the main aspects that will lead to a solution to the current problem being faced by students using the LMS. In some of the responses the respondents said

“Enhance network and system improvement to ensure no hanging.” (Respondent 314). Meaning network improvement is vital. another respondent said *“Ensure it's not always sluggish and internet speed increased”* (Respondent 351). Meaning that network improvement is the main solution. Adding to this another respondent said *“ensure that there is a stable connectivity and a method of ensuring a complete understanding of the systems for them to be working throughout”* (Respondent 187). Meaning that connectivity is a major aspect that needs to be addressed. Another respondent also said: *“Ensure less tech errors and network coverage is optimal”* (Respondent 290). Meaning there is need for technical and network support. On the same perspective another respondent said *“Ensure technical challenges are dealt with swiftly”* (Respondent 207). Meaning technical support is vital to realization of the ultimate experience.

4.7.8. Inferential statistics

The study sought to determine the nature of the relationship of each course completion aspect including number of dropouts, students’ performance and technological challenges and the use of LMS through regression analysis. The findings of the analysis are as reported below:

Model summary

The study sought to determine the proportion of changes in the course completion aspects that can be explained by the use of the LMS. The findings are as reported in the model summary table below:

Table 4.34: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.277 ^a	.077	.062	.60371

Source: Research Data (2024)

Based on the table the value of R is given as 0.277 while R square is 0.077 and adjusted R square is 0.062 while the standard error of the estimate is 0.60371. The R value of 0.277 is closer to zero which means that the relationship between LMS and course completion measures (dropouts, work-life balance, postgraduate performance, streamline postgraduate course, and technical challenges) is a weak positive correlation. The R square value of 0.077 means that only 7.7% of the changes in academic optimism can be explained by the use of LMS. An adjusted R square value of 0.062 means that the nature of the relationship remains weak even after consideration of all the predictors. The standard error of the estimate of 0.60371 is low meaning that there is a higher standard of accuracy in the predictive model. The conclusion therefore is made based on the values of R and R square and this shows a weak relationship since only 7.7% of the relationship between the Use of LMS and the measures of course completion.

Analysis of Variance (ANOVA)

The study determined whether the results of the regression model were statistically significant which was determined using the analysis of variance (ANOVA) test and the results are as presented below:

Table 4.35: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.524	6	1.921	5.270	.000 ^b
Residual	138.497	367	.364		
Total	150.021	371			

Source: Research Data (2024)

The ANOVA table shows that the sum of squares for the regression is 11.524 and the residual value is 138.497. The total sum of squares was 150.021. In the degrees of freedom df for the regression is 6 while that of the residual value is 367 and that for the total was 371. The mean square for the regression is 1.921 while that of the residual is 0.364. The F value at (4, 367) is given as 5.27 and the p value is 0.00. The sum of square for the regression 11.524 implying the variation in the use of LMS explains the changes in the course completion including the number of postgraduate dropouts, support to work life balance, streamlining postgraduate course, postgraduate performance, backend support, and technical challenges affecting the performance.

Regression coefficients

The study sought to establish how each of the measures of course completion (dropouts, work-life balance, postgraduate performance, streamline postgraduate course, and technical challenges) were affected by the use of LMS using a regression analysis. The findings of the section are as reported in the table below:

Table 4.36: Regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	4.100	.233		17.605	.000
LMS affect number of postgraduate dropouts	-.086	.035	-.133	-2.431	.016
LMS support work life balance	.037	.046	-.046	-.820	.413
LMS streamline postgraduate course	-.145	.047	-.180	-3.094	.002
LMS increases postgraduate performance	.080	.049	.091	1.616	.107
Kusma has sufficient backend support	.070	.041	.097	1.717	.087
technical challenges affect postgraduate performance	-.079	.040	-.110	-1.966	.050

Source: Research Data (2024)

In the unstandardized coefficients column, the constant coefficient is 4.100 (standard error 0.233) which is also the y intercept. The coefficient for LMS affecting the number of postgraduate dropouts is -0.086 (standard error 0.035) and that for LMS supporting work life balance is 0.037 (standard error 0.046), the coefficient for LMS streamline postgraduate course is -0.145 (Standard error 0.047) on LMS increasing postgraduate performance is 0.080 (standard error = 0.049). On *Kusoma* having sufficient back end support the coefficient is 0.070 (standard error 0.41) and for the technical challenges affecting postgraduate performance the coefficient is -0.079 (standard error 0.40).

In the standardized coefficient table it is evident that the values for the coefficients are -0.333 for the number of postgraduate dropouts, for work life balance support -0.046, for LMS streamlining postgraduate course -0.145 for increasing postgraduate performance

the value is 0.091 for *Kusoma* having sufficient back end support the value is 0.097 and for technical challenges affecting postgraduate students is -0.110 The t values recorded as 17.605 for the constant -2.431 for the number of postgraduate dropouts, for work life balance support -0.820, for LMS streamlining postgraduate course -3.094 for increasing postgraduate performance the value is 1.616 for *Kusoma* having sufficient back end support the value is 1.717 and for technical challenges affecting postgraduate students is 1.966. The p value was recorded as 0.000 for the constant 0.016 for the number of postgraduate dropouts, for work life balance support 0.413, for LMS streamlining postgraduate course 0.002 for increasing postgraduate performance the value is 0.107 for *Kusoma* having sufficient back end support the value is 0.087 and for technical challenges affecting postgraduate students is 0.050. In the understanding of the results the coefficient table shows that for the constant there is a positive value of 4.1 which means that this is the y intercept that moderates the relationship. Considering the p value, it was found that the value is statistically significant to the relationship hence has a sufficient response to the relationship.

The coefficient for LMS affecting the number of postgraduate dropouts was obtained to be a negative value of -0.086 and the p value for the relationship was found to be 0.016 which means that it is also statistically significant. This means that there is a negative relationship between the use of LMS and the number of postgraduate dropouts. This means that as the learning institutions continue to invest in the LMS there is a corresponding reduction in the number of postgraduate dropouts. The findings agree with those of Seo *et al.* (2021) who also found that LMS helps young graduates learn better and reduces the possibility of dropouts but old people are conservative. Supporting these findings is another research by Daar *et al.* (2023) who found that the use of the LMS motivated students to complete their course through an improved experience. The findings also agree with those of Tamada, Giusti and Netto (2022) who found that the probability of students dropping out of school when they are using the LMS learning is lower due to the flexibility provided by the LMS.

A positive coefficient 0.037 and a p value of 0.413 were obtained on the relationship between LMS and support for work life balance. This means that there is a positive

relationship between the LMS and work life balance. The relationship however was found not to be statistically significant meaning that the contribution of this variable to the relationship is negligible and cannot be considered with certainty. These findings agree with those of another research by Bauwens et al. (2020) who also found that when the teachers engaged with the use of the LMS it allowed them the freedom to have a work-life balance by scheduling activities based on their convenient times.

In the consideration of whether *Kusoma* LMS streamlining postgraduate course the findings showed that there was a negative coefficient -0.145 and a p value of 0.002 which means that the relationship is statistically significant. The findings conclude a negative correlation between use of LMS and streamlining of the postgraduate course. The findings differ with those of another research by Strakos *et al.* (2023) who states that the courses in most LMS's are organized based on weeks hence there is a high likelihood that individuals will consider using the LMS at least once a week. The variation can be explained using the contextual gap where the context within which the other study was done is different from that of the current research.

In the determination of whether the use of LMS increases postgraduate performance a positive coefficient 0.080 was obtained and a p value of 0.107. The results show that there is a positive relationship between the students' performance and use of the LMS. However, the findings are not statistically significant meaning the effect is limited in the relationship. The findings agree with those of Darko (2021) who found that students with the ease of using the blackboard had a better performance. Razali *et al.* (2022) also agrees with the current study in the findings which 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 findings also support those of another research by Al Shirah, Al-Omari, and Igried (2021) which showed that there was a statistically significant difference between the groups that utilized the LMS and those that did not use the LMS. In the determination of whether *Kusoma* had sufficient back end support the coefficient obtained was positive 0.070 and the p value was 0.080. This means there exists a positive relationship between the use of LMS and the perception that LMS has sufficient back-end

support. The findings however do not have a significant magnitude of impact to the relationship since they are not statistically significant based on the p value.

In the consideration of technical challenges affecting the postgraduate performance a negative regression coefficient was obtained -0.079 and a p value of 0.05 which means that there is a negative correlation between the technical challenges in the LMS and the postgraduate student’s performance. In consideration of the p value however it is obtained to be 0.05 which is the same as the significance level which means that the results are statistically significant. The findings align with those of Rahmani *et al.* (2022) who also found out that when the students are facing challenges such as lack of the internet access and also lack of skills and knowledge needed for them to navigate the LMS there is a high likelihood that they are going to drop out of school.

4.8 LMS and teacher –students contact

The study sought to investigate the effect of LMS on the teacher –student contact duration through studying three indicators which were the frequency of student –teacher contact, the quality of teacher-student contact and also the flexibility of teacher-student contact. The findings are as presented below:

4.8.1. Frequency of teacher-student contact.

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that *Kusoma* increases the frequency of students-teacher contact. The findings are as shown in the table below:

Table4.37: Frequency of teacher-student contact.

Descriptive aspect	Kusoma increases the frequency of students -teacher contact
N	371
Mean	4.0698
Std. Deviation	.91775

Source: Research Data (2024)

The total valid number of participants was 371; the mean of the responses was 4.0698 and the standard deviation was 0.91775

This means that the standard deviation of 0.91775 shows that there is not much deviation from the mean. The mean of 4.0698 which is measured on a Likert scale means that the participants agree that *Kusoma* increases the frequency of students-teacher contact. The findings support those of Bradley-Dorsey *et al.* (2022) who also found there exists a significant difference in student and teacher interaction in the online classes and the face-to-face interaction. It was found that the ones in the face-to-face class have the limitation of time while the LMS offers flexibility in the process of interaction hence leading to improvement of the interactions between the groups.

The study sought to find out the frequencies and percentages of the participants who agreed and disagreed on *Kusoma* increasing the frequency of students -teacher contact. The findings are as presented in the table below:

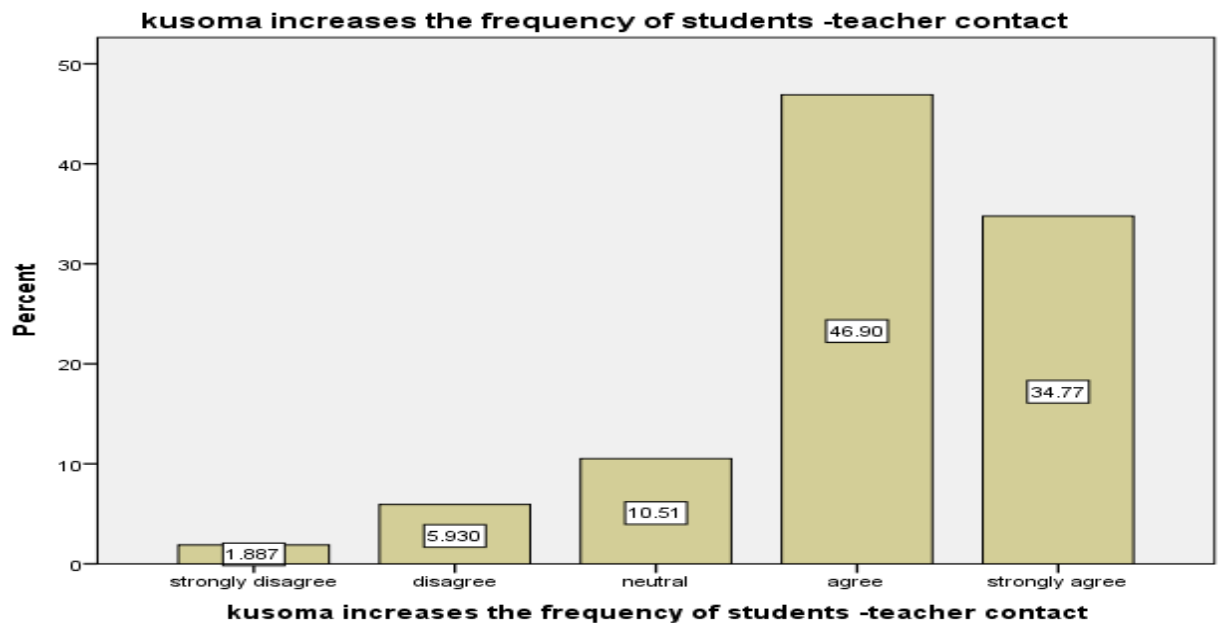


Figure 4.19: Kusoma increases the frequency of students-teacher contact

Source: Research Data (2024)

The findings showed that 7 participants representing 1.9% strongly disagreed, 21 people representing 5.9% disagreed while 40 persons representing 10.5% were neutral. Those who agreed were 174 individuals which is 46.9% and those who strongly agreed were 128 persons representing 34.8%. The findings support those Bradley-Dorsey *et al.* (2022) who also found there exists a significant difference in student and teacher interaction in the online classes and the face-to-face interaction. This study established that students in the face-to-face class have the limitation of time while the LMS offers flexibility in the process of interaction hence leading to improvement of the interactions between the online students and lecturers.

4.8.2. Quality of teacher-student contact

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that *Kusoma* increases the quality of students to teacher contact. The findings are as shown in the table below:

Table 4.39: Quality of teacher-student contact

Descriptive aspect	Kusoma increases the quality of students to teacher contact
N	371
Mean	3.7339
Std. Deviation	.82949

Source: Research Data (2024)

The total valid number of participants was 371; the mean of the responses was 3.7339 and the standard deviation was 0.82949. This means that the standard deviation of 0.82949 shows that there is not much deviation from the mean. The mean of 3.7339 which is

measured on a Likert scale means that the participants agree that LMS affected the quality of teacher to student contact. The study sought to establish the frequencies and percentages of the participants who agreed and disagreed on *Kusoma* increasing the quality of students -teacher contact. The findings are as presented in the table below:

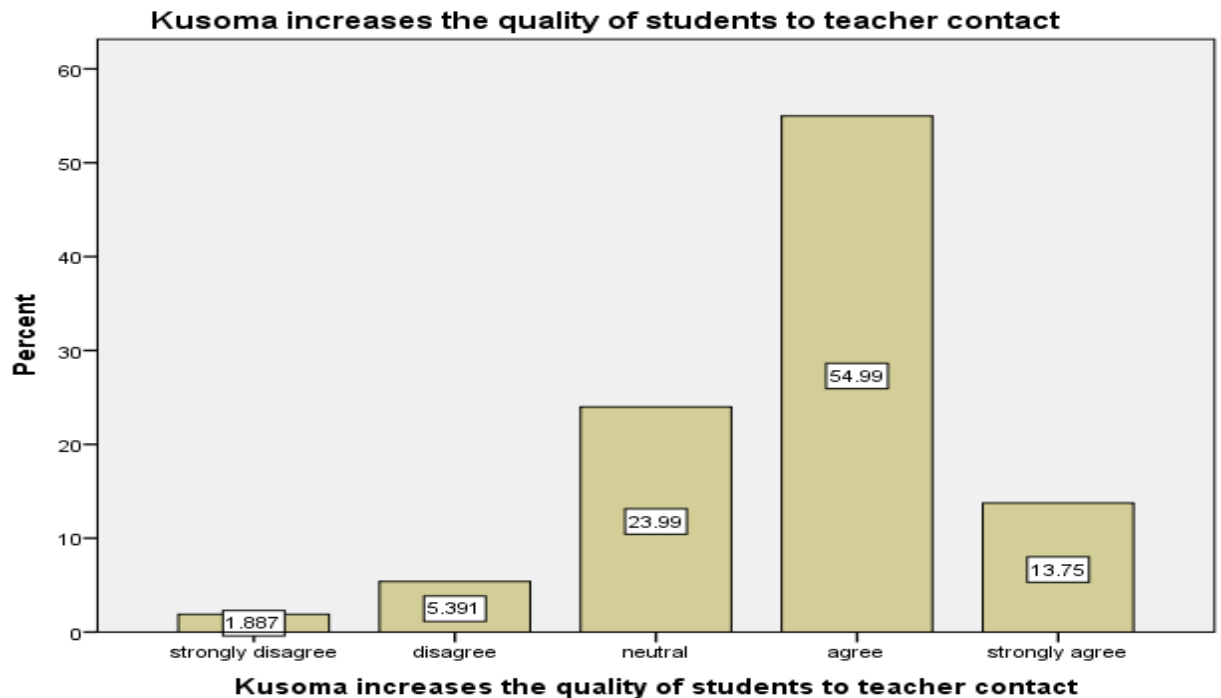


Figure 4.20: Kusoma increases the quality of students-teacher contact

Source: Research Data (2024)

The findings showed that 7 participants representing 1.9% strongly disagreed, 20 people representing 5.4% disagreed while 89 persons representing 24% were neutral. Those who agreed were 204 individuals which is 55% and those who strongly agreed were 51 persons representing 13.7%. This means that the majority of the participants 55% agreed that the use of LMS leads to an improvement of the quality of students to teacher communication. These findings agree with those of Alhazmi et al. (2021) who opines that when the teachers and students are using the LMS communication it provides a better communication point with a reference that makes it essential and a vital tool for communication and that the communication can be recorded for future reference hence learning quality is enhanced.

4.8.3. Flexibility of teacher- student contact

The study sought to establish the descriptive statistics of the participants who agreed or disagreed that *Kusoma* increases the flexibility of students to teacher's contact. The findings are as shown in the table below:

Table4.41 Flexibility of teacher- student contact

Descriptive aspect	Kusoma increases the flexibility of students to teachers contact
N	371
Mean	4.1525
Std. Deviation	.82701

Source: Research Data (2024)

Total valid number of participants was 371; the mean of the responses was 4.1525 and the standard deviation was 0.82701. This means that the standard deviation of 0.82701 shows that there is not much deviation from the mean. The mean of 4.1525 which is measured on a Likert scale means that the participants agree that *Kusoma* increases the flexibility of students to teachers contact. The findings are in alignment with those of Kerimbayev *et al.* (2020) who established that when the LMS is used in the course delivery there is an improvement of the virtual communication between the teachers and students which complement the activities conducted in classroom. The study sought to find out the frequencies and percentages of the participants who agreed and disagreed on *Kusoma* increasing the flexibility of student -teacher contact. The findings are as presented in the figure below:

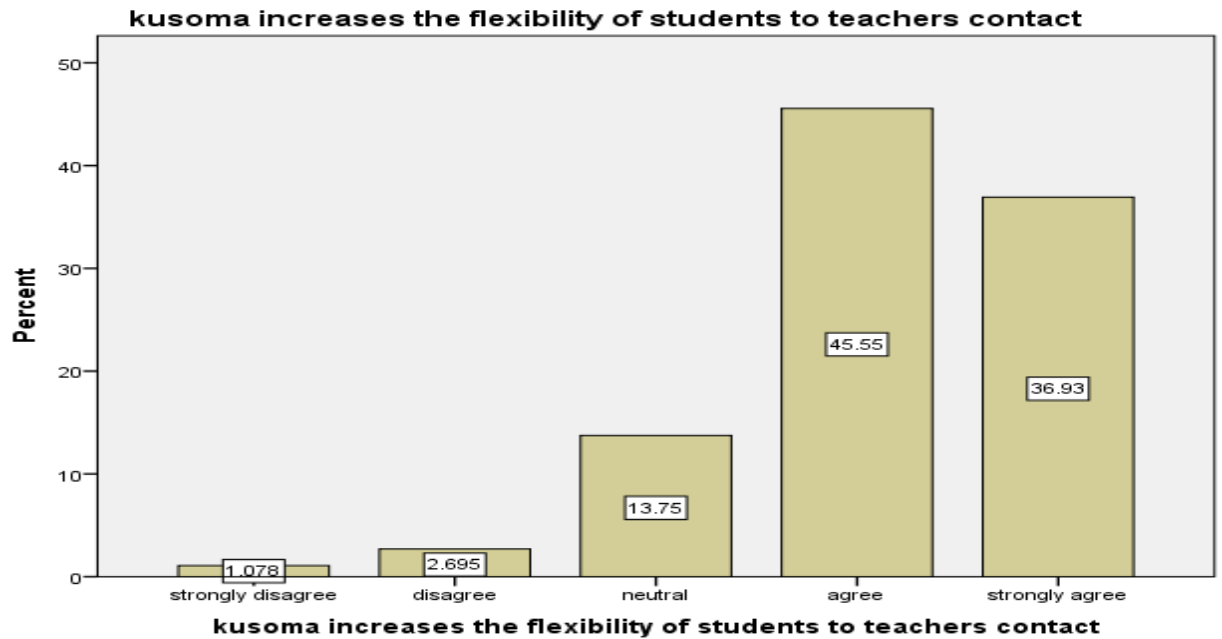


Figure 4.21: Kusoma increases the flexibility of students to teachers contact

Source: Research Data (2024)

The findings showed that 4 participants representing 1% strongly disagreed, 10 people representing 2.7% disagreed while 51 persons representing 13.8% were neutral. Those who agreed were 169 individuals which is 45.6% and those who strongly agreed were 138 persons representing 36.9%. The findings of this study align with those of Teng and Wang (2021) who opines that the students who were engaged in the LMS program were more likely to engage with the teachers effectively than those in the physical class. The convenience was facilitated by the ability of the LMS to interact with students outside the physical meeting.

4.8.4. Qualitative data

The findings showed that the majority of the participants (176) agreed that the use of LMS increased the interactions between the students and teachers. This increase is facilitated by the presence of more interactive time where the interactions are scheduled according to the time being used by the individual. In this context when the students find it convenient, they

can easily contact the teachers and the duration and frequency for their interactions is therefore increased. In some of the responses the respondents said:

“Interactions are record breaking high” (Respondent 196) another respondent said *“Through use of chat box where teachers can respond to questions posted by learners similarly, students can respond to tests and quizzes posted on Kusoma by teachers”* (Respondent 311) while another respondent also said *“Increases level of interaction”* (Respondent 180). This means that more students are being engaged with the interaction with teachers through the use of the LMS platform.

In the perspective of the time of interaction, the majority stated that they are interacting with tutors more during their convenient time using the LMS. In this context some of the respondents said: *“They're able to meet often with flexible timelines”* (Respondent 19) another said *“within specific set out times and most of the learning s student oriented”* (respondent 105) and another respondent also added *“Meeting is within specific set out times and most of the learning s student oriented”* (Respondent 302). This means that the students are happy with the introduction of *Kusoma* LMS since they can interact with their teachers at any given time and also can use the time conveniently. They share their information and are updated about the progress in their coursework at a convenient time. The use of LMS therefore has resulted in an improvement of the interactions between the teachers and students.

While most of the respondents agreed that the Use of LMS led to the increased interaction between the teacher and student, others (112) found the interaction to reduce particularly the physical interaction. In support of this position some of the respondents said: *“The interactions are so brief. Students need to put more effort into achieving their goals. It is purely a virtual platform that at times locks out those who are not able to interact or log in”* (Respondent 276) another respondent said *“Meeting is within specific set out times and most of the learning is student oriented”* (Respondent 318) and another respondent also said *“Posting online all materials may hinder teachers meeting students”* (Respondent 216). The responses from these respondents shows that there is a reduction in the rate of interaction between the teachers and students where the frequency is reduced particularly

for the physical interaction as more content is posted online instead of interacting with the students.

In another context the findings showed that the physical interactions are reduced leading to more interactions being channeled to the online platform. In this context some of the respondents stated: *“Teachers are culprits in nonphysical teachings”* (Respondent 114) another respondent said *“reduce physical interaction but increase virtual interactions”* (Respondent 217) and another respondent said *“Teachers at times are only sharing work and details leaving one to figure the rest alone”* (Respondent 329). This means that the teachers continue to rely on the LMS for the communication process while they are reducing the physical interaction. Therefore, one can conclude that the interactions are also reduced in one context while increasing in the other perspective.

The study sought to establish the effect of LMS on the quality of students-teacher’s interaction within the Kenyatta University. The findings are as presented in this section. Majority of the respondents (243) agreed that the inclusion of the LMS in the learning process resulted in an improvement of the quality of interactions between the teachers and students. In support of this position some of the respondents said: *“Interactions shows quality has gone up”* (Respondent 171) another respondent also said *“Interactions are fruitful and work oriented”* (Respondent 318) In the same context another respondent said *“Daily interaction improves the quality of academic delivery”* (Respondent 93) this means that they all agreed that the interaction quality were improved through the inclusion of the LMS as the students interacted more frequently and could get all they need through the LMS. The study sought to determine the effect of LMS on the flexibility of students to teacher interaction. The findings are as presented in the section below:

The findings also showed that the use of LMS makes the interactions to be flexible and effective. The flexibility of interactions therefore is improved through the use of LMS. In some of the responses the respondents said: *“Communication takes over email and Kusoma and response takes time”* (Respondent 300) meaning communication is flexible and can be undertaken in multiple sectors. Another respondent said *“Communication is done thought chatting with lecturers at their own time”* (Respondent 192) which means that the

communication can be done conveniently at any given time. Another respondent also said *“Makes in convenient provided students observe timelines”* (Respondent 2). Meaning that the communication is flexible in terms of time. Another respondent also said *“Communication has improved with access being all the time just a click away”* (Respondent 9). Meaning that the communication is readily available which makes it flexible. The findings from this section therefore shows that through the use of LMS there is promotion of an effective working environment between the teachers and the students where they can have flexibility in scheduling the communication processes and also increase their need for supporting a learning environment between the teachers and the students. The study sought to establish the recommendations that need to be made to improve the student to teacher interaction when using the LMS. The findings are as presented in this section.

Majority of the participants recommended that there is a need to ensure training is done for the students and also the tutors. This includes training for all members who are using the LMS which will increase their ability to navigate the system and provide a positive outcome. In essence most of the participants argued that inability to use the LMS is one of the main concerns that need to be addressed since they are posing a threat to their wellbeing. Through training therefore this problem can be solved and their experience enhanced. In some of the responses in support of training the respondents said: *“More knowledge on the use of Kusoma is needed”* (Respondent 33) another said *“By training teachers and students as well on how to effectively use LMS.”* (Respondent 51) another said *“Train teachers and students on effective use of LMS”* (Respondent 150). This shows the need for having an interactive training between the students and the teachers on how to use the LMS which will also affect the ultimate experience.

Making the LMS more interactive also emerged as one of the main recommendations made by the participants as a solution to the current issues facing the LMS. In some of the responses the respondents said: *“Real time interaction is needed with Kusoma”* (Respondent 123) another respondent said *“More classes meetings”* (Respondent 160) and another one added *“make the system more interactive using real interaction such as*

videography that provide a physical interaction feeling” (Respondent 240). This means that while the LMS performs its functions effectively there is need for improvement in the context of interactions to make them more realistic which will boost the experience of the students who are using the LMS.

4.8.5. Inferential statistics

The study sought to determine the nature of the relationship of each student-teacher contact duration aspects including the frequency of student –teacher contact, the quality of teacher-student contact and also the flexibility of teacher-student contact. The findings of the analysis are as reported below:

Model summary

The study sought to determine the proportion of changes in the students-teacher contact duration that can be explained by the use of the LMS. The findings are as reported in the model summary table below:

Table 4.43: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.171 ^a	.029	.022	.61659

Source: Research Data (2024)

Based on the table the value of R is given as 0.171 while R square is 0.029 and adjusted R square is 0.022 while the standard error of the estimate is 0.61659. The R value of 0.171 is closer to zero which means that the relationship between LMS and students and teacher contact measures (frequency, quality and flexibility) is a weak positive correlation. The R square value of 0.029 means that only 2.9% of the changes in the students-teacher contact duration aspects can be explained by the use of LMS. An adjusted R square value of 0.022

means that the nature of the relationship remains weak even after consideration of all the predictors. The standard error of the estimate of 0.61659 is low meaning that there is a higher standard of accuracy in the predictive model. The conclusion therefore is made based on the values of R and R square and this shows a weak relationship since only 2.2% of the relationship between the Use of LMS and measures of students to teacher contact duration.

Analysis of Variance (ANOVA)

The study determined whether the results of the regression model were statistically significant which was determined using the analysis of variance (ANOVA) test and the results are as presented below:

Table 4.4: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.411	3	1.470	3.867	.010 ^b
Residual	145.610	370	.380		
Total	150.021	371			

Source: Research Data (2024)

The ANOVA table shows that the sum of squares for the regression is 4.411 and the residual value is 145.610. The total sum of squares was 150.021. In the degrees of freedom df for the regression is 3 while that of the residual value is 368 and that for the total was 371. The mean square for the regression is 1.47 while that of the residual is 0.38. The F value at (4, 367) is given as 3.87 and the p value is 0.010. The sum of squares for the regression 4.411 implies the variation in the use of LMS explains the measures of student-teacher contact duration including the frequency quality and flexibility.

Regression coefficients

The study sought to establish how each of the measures of students-teachers contact duration (frequency of contact, quality of contact, and flexibility of the contact) were affected by the use of LMS using a regression analysis. The findings of the section are as reported in the table below:

Table 4.45: Regression coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	3.789	.183		20.727	.000
Kusoma increases the frequency of students' teacher contact	.093	.043	-.137	-2.177	.030
Kusoma increases the quality of students to teacher contact	.061	.048	.081	1.268	.206
Kusoma increases the flexibility of students to teachers contact	.080	.045	-.106	-1.772	.077

Source: Research Data (2024)

In the unstandardized coefficients column, the constant coefficient is 3.789 (standard error 0.183) which is also the y intercept. The coefficient for LMS affecting the frequency of students –teacher contact duration is 0.093 (standard error 0.043) and that for LMS

supporting affecting the quality of students-teachers contact 0.061 (standard error 0.048), the coefficient for LMS affecting the flexibility of student-teacher contact duration is 0.080 (Standard error 0.045)

In the standardized coefficient table, it is evident that the values for the coefficients are -0.137 for the frequency of teacher-student contact, for quality of student-teacher contact the coefficient was 0.081, for flexibility of teacher-student contact duration the coefficient was -0.106. The t values recorded as 20.727 for the constant -2.177 for the frequency of teacher-student contact, 1.268 for the quality of teacher-student contact duration and -1.722 for the flexibility of teacher-student contact duration.

The p values were recorded as 0.000 for the constant 0.030 for the frequency of teacher-student contact duration, 0.206 for the quality of student-teacher interaction, and 0.077 for the flexibility of teacher-student contact duration. In the understanding of the results the coefficient table shows that for the constant there is a positive value of 3.789 which means that this is the y intercept that moderates the relationship. Considering the p value 0.000 it was found that the value is statistically significant to the relationship hence has a sufficient response to the relationship.

The coefficient for LMS affecting the frequency of teacher-student contact duration was obtained to be a positive value of 0.093 and the p value for the relationship was found to be 0.030 which means that it is also statistically significant. This means that there is a positive relationship between the use of LMS and frequency of teacher-student contact. The more one uses the LMS the higher the frequency of teacher-student contact. The findings agree with those of another study by Teng and Wang (2021) who also found that the students who were engaged in the LMS were more likely to engage with the teachers effectively than those in the physical class. The convenience was facilitated by the ability of the LMS to interact with students outside the physical meeting.

A positive coefficient 0.067 and a p value of 0.206 were obtained on LMS affecting the quality of student-teacher contact. This means that there is a positive relationship between the LMS quality of student-teacher contact. The relationship however was found not to be

statistically significant meaning that the contribution of this variable to the relationship is negligible and cannot be considered with certainty. The findings of the study agree with those of Bradley-Dorsey, *et al.* (2022) who also found there exists a significant difference in student and teacher interaction in the online classes and the face-to-face interaction. It was found that the ones in the face-to-face class have the limitation of time while the LMS offers flexibility in the process of interaction hence leading to improvement of the interactions between the groups.

In the consideration of whether LMS increased the flexibility of student-teachers contact the coefficient obtained was 0.080 and a p value of 0.077 which means that the relationship is not statistically significant. The findings conclude a positive correlation between use of LMS and the flexibility of students-teachers contact. The findings are in agreement with that of another research by Teng and Wang (2021) who found that students who were engaged in the LMS were more likely to engage with the teachers effectively than those in the physical class. The convenience was facilitated by the ability of the LMS to interact with students outside the physical meeting.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter focuses on the concluding aspects of this study. The chapter begins with a summary of findings followed by conclusions on the research then presents different recommendations for each of the institutions and policy makers regarding learning management systems. The chapter ends with recommendations for future studies.

5.2 Summary of Findings

The findings show that the *Kusoma* LMS contains several design features such as the dashboard with the user interface that facilitates navigation of the *Kusoma*, enabling learning virtually. The functionality of the dashboard features makes *Kusoma* easy to use and allows convenient engagement in learning activities by providing the required tools for effective learning. 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 LMS has different features that contribute to the student's developing academic optimism. The findings showed that the features of LMSs enhance students' experiences while learning which enhances 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. Some pros of using the LMS include the ability to provide a work-life balance and accessibility of materials at any point. However, the challenges include limited interface features that negatively affect the postgraduate students' attitudes at KU.

The results showed that the use of *Kusoma* LMS affects course completion in different ways. The number of dropouts is reduced among postgraduate students when LMS is being used in their education due to the ability to access learning material at any point and convenience in communication. The student's performance is also enhanced when using LMS. Lack of technological know-how emerged as a major setback in course completion since the students who lack the basic skills in information technology drop out of school. Other times, technological hiccups such as lack of internet access that occur and cause to

lack of accomplishment on due school inputs such as missing assignment deadlines lead to a negative attitude towards the use of LMS for postgraduate studies in KU.

The *Kusoma* LMS enhances the teacher-student contact. The findings showed that the frequency of interaction between teachers and students is increased due to the presence of communication tools such as a chat box and lecturer emails in the notes. The flexibility of interaction was also found positive since students and teachers schedule their meetings at their convenience as opposed to the physical classes. The quality of interaction however 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.

5.3 Conclusion

The study sought to establish the effects of learning management systems on the performance of online postgraduate students at Kenyatta University, Kenya. 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 realise 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.

5.4 Recommendations

5.4.1 Practice 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.

The findings showed that students who are disadvantaged in terms of technological know-how are likely to drop out of their postgraduate studies. On the other hand, it was established that the students who understood how to navigate the LMS are likely to have a better learning experience. Based on these findings, the recommendation is 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.

The findings showed that while the frequency and flexibility of interactions are increased with the use of *Kusoma* LMS, there is a downside to the quality of the interactions. Students interacting with the teachers on *Kusoma* have a diminished personal touch. The study recommends that the *Kusoma* LMS be upgraded into a better version that will offer more realistic interactions that simulate leading social media platforms such as WhatsApp which can significantly bridge the impersonal touch issue.

Lack of access to the internet and network challenges are among the main challenges experienced by most students who are using LMSs. Based on this finding, the study recommends the development of an offline version of the *Kusoma* LMS which will be accessible to all students using different devices without internet access.

5.4.2 Policy Recommendations

LMS has emerged as a system that offers numerous advantages to the learning process of postgraduate students in KU including reducing the number of dropouts, increasing learning motivation and providing convenient learning experiences. The government should consider developing an education policy that calls for higher education learning institutions to integrate LMS as a core learning resource.

Lack of access to the internet and a slow performance emerged as one of the main technical challenges that hinder the development and adoption of LMS-based learning leading to students feeling not motivated to engage in the learning process. The study recommend's the government develop a policy that would exempt registered students from paying value-added taxes on the internet and data bundles they purchase, intending to use for schooling. A verification system to identify legitimate students should be put in place.

Lack of skills was one of the main aspects that hindered the inclusion of the LMS in learning. The study recommends that the Kenyan government work with information technology experts and the Commission for University Education to identify fundamentals of IT that can be made a common unit for all higher learning institutions.

5.5 Suggestions for Further Studies

The current study showed that the adoption of the LMS in schools results in improved academic optimism, enhancing course completion, and largely boosts student-teacher contact. Further studies can research:

- LMS features that bridge the gaps between virtual and physical class experiences.
- Policy recommendations for adopting LMSs across higher learning institutions in Kenya

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APPENDICES

Appendix I: Letter to the Respondents

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NAIROBI

July 2024

Letter to the Respondents

This is a questionnaire for academic research aiming to find out the Learning Management Systems (LMS) effects on the performance of **postgraduate online students** at Kenyatta University (KU), Kenya. Be informed that the responses you give will impact the outcome of the research and therefore you are expected to be ethical. There are three sections to be filled. Section one presents the eligibility criteria questions; the second section contains quantitative study questions while the third and the last section ask qualitative type of questions. As a researcher, I understand the significance of upholding ethics in research. Therefore, the information gathered in this questionnaire will not be used for any other purpose other than academic one, as already explained. Neither will any of the information you provide be shared with any other party besides the student researcher. To guarantee your safety, this study is anonymous, no personal identification will be requested. You should also not provide information that can identify you. By participating in this research, you consent that the participation is voluntary and there were no threats or incentives provided to lure you into taking part in the study. If you agree and consent kindly proceed.

My participation is voluntary:

- Yes
- No

The population sample inclusion criteria

1.The respondent need to be at the university for at least one semester for them to have understood and interacted with the LMS. If you are on your first semester, you will not eligible.

Are you a KU postgraduate online student in year 1 semester 1?

Yes

No

Appendix II: Questionnaire

The population sample inclusion criteria

1. The respondent needs to be a digital postgraduate student at KU for at least one * semester for them to have understood and interacted with the LMS. If you are on your first semester, you are not eligible.

2. Which semester are you in?

Semester	Year 1 Sem2	Year 2 Sem1	Yeas 2 Sem2
Response			

3. What is your Sex? * Male Female

4. What is your age in years? *

Age (years)	18 – 25	26 – 35	36 – 45	46 – 55	Above 55
Response					

5. Under which KU DSVOL school are you? *

Faculty	Response
School of Pure and Applied Sciences	
School of Law, Arts, and Social Sciences	
School of Agriculture and Environmental Studies	
School of Education and Lifelong Learning	
Other:	

6. What is the title of the course you are enrolled in KU DSVOL? *

7. How often do you use the KU LMS (*Kusoma*) while in session? *

Frequency	Everyday	Weekly	Monthly	Other
Response				

8. Identify and describe feature(s) in *Kusoma* that deliver exceptional experience

9. **PART B - LMS**

To what extent do you agree with the following statements

Likert Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree
It is easy to navigate the KU <u>kusoma</u> LMS					
The features in <u>Kusoma</u> perform their intended functions					
The features in Kusoma are easy to use (in a self-explanatory manner)					
Kusoma enhances the quality of learning					
The Kusoma LMS is accessible on multiple devices					
The use of Kusoma makes postgraduate learning more accessible					

10. Describe how the use of LMS makes postgraduate learning more accessible

11. Explain how *Kusoma* enhances postgraduate learning

12. Describe challenges you face that is related to *Kusoma* features

13. Describe a recommendation to resolve the challenges you identified on features in *Kusoma*

14. **Course Completion**

To what extent do you agree with the following statements

Likert Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree
Kusoma affects the number of postgraduate dropouts in KU					
Kusoma facilitates a balanced work study mode					
Kusoma streamlines postgraduate coursework					
Kusoma increases postgraduate students' performance					
Kusoma has sufficient back-end support					
Kusoma technical challenges affect postgraduate student performance					

15. What are some of the technological challenges you experience while using the *Kusoma*?

16. Recommend a suitable solution to the technical challenge you identified

17. Describe how LMS affects the number of postgraduate dropouts in KU

-
18. Describe how *Kusoma* technical challenges affect postgraduate student performance

-
19. Describe a recommendation to enhance the performance of students using *Kusoma*

-
20. **Academic Optimism** *

To what extent do you agree with the following statements

Likert Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree
Using Kusoma enhanced my motivation to pursue postgraduate studies					
The Kusoma design supports my studies sufficiently, encouraging its use					
Kusoma affects my learning experience in KU					
Technical challenges in Kusoma affect my attitude towards using kusoma					

21. Describe how *Kusoma* affects your learning experience in KU

22. Describe how using *Kusoma* affects your motivation to pursue your postgraduate studies

23. Describe how technical challenges in *Kusoma* affect your attitude towards using *Kusoma* for your postgraduate studies

24. Describe a recommendation for the technical challenges you face while using *Kusoma*
-

25. **Teacher - Students Contact** *

To what extent do you agree with the following statements?

Likert Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree
Kusoma increases the frequency of teacher-student contact					
Kusoma increases the quality of <u>teacher -student contact</u>					
Kusoma provides <u>flexible modes of interactions for teacher-student contact</u>					

26. How does *Kusoma* affect the **frequency of interaction** between the teachers and students?
-

27. How does *Kusoma* affect the **quality of interaction** between the teachers and students?

28. How does *Kusoma* affect the **flexibility of the modes of communication** used for teacher - student contact?

29. Describe a recommendation for addressing teacher - student contact via *Kusoma*

30. Is there anything else not mentioned in the questionnaire that you would like to bring to my attention in the facilitation of this research?

Help shape the future of postgraduate performance!

*Share your insights on KU's
Learning Management System - KUSOMA!*

Research Data Collection

*Terry Otieno is conducting research on
'Learning management systems and
performance of online postgraduate
students in Kenyatta University, Kenya.'*

*The target population is postgraduate
students in Digital School - Kenyatta
University.*

It take 7 minutes!

**Scan the QR code
to fill the questionnaire**



*For inquiries reach me via:
tea03529@gmail.com*

Appendix IV: Krejcie and Morgan table


Table 1: Table for Determining Sample Size for a Finite Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	<u>354</u>
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Appendix V: Approval for data collection for postgraduate students


KENYATTA UNIVERSITY
OFFICE OF THE DEPUTY VICE CHANCELLOR
RESEARCH, INNOVATION AND OUTREACH
Email: dvc-rio@ku.ac.ke Tel/Ext: 3026

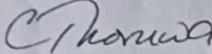
INTERNAL MEMO

FROM: DVC, RIO **DATE:** 5th April, 2024
TO: Dean, DSVOL **REF:** KU/DVCR/ CSDDS/VOL. I/102

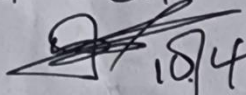
RE: Approval to Collect Preliminary Data on Online Postgraduate Students

Ms. Terry Otieno ADM. No. C153.OL/CTY/20349/2022, a Masters student at the Department of Public Policy and Administration working on her research proposal titled "Learning Management System (LMS) effect on performance of Postgraduate online students at Kenyatta University" has been granted approval to obtain data on population of online postgraduate students to enable her frame her sample size.

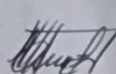
Kindly facilitate her access to the requested data.



Prof. Caroline Thoruwa Ph.D.
Ag. Deputy Vice-Chancellor Research, Innovation and Outreach

cc: Vice-Chancellor
DVC - Academic

Mr. Ken/Munyao
Please assist the student to get the required data.
 10/4/2024

Transforming Higher Education... Enhancing Lives
Kenyatta University is ISO 9001: 2015

The Informa
Admissions: Kindly assist
E-learning Coordinator 



KENYATTA UNIVERSITY
DEAN'S OFFICE
11 APR 2024
DIGITAL SCHOOL OF VIRTUAL
& OPEN LEARNING
Tel: 43844 0 00100 NAIROBI

Appendix VI: Year of study

	Frequency	<u>Percent</u>	Valid Percent	Cumulative Percent
Year 1 semester 2	42	10.9	10.9	10.9
year 2 semester 1	101	26.1	26.1	37.0
year 2 semester 2	84	21.7	21.7	58.7
Valid doing master's thesis	157	40.6	40.6	99.2
PHD	3	.8	.8	100.0
Total	387	100.0	100.0	

Appendix VII: Gender

	Frequency	<u>Percent</u>	Valid Percent	Cumulative Percent
Female	219	56.6	56.6	56.6
Male	160	41.3	41.3	97.9
Valid <u>Prefer not to say</u>	3	.8	.8	98.7
Other	5	1.3	1.3	100.0
Total	387	100.0	100.0	

Appendix VIII: Age of participants

	Frequency	<u>Percent</u>	Valid Percent	Cumulative Percent
18-25	60	15.5	15.5	15.5
26-35	141	36.4	36.4	51.9
Valid 36-45	118	30.5	30.5	82.4
46-55	68	17.6	17.6	100.0
Total	387	100.0	100.0	

Appendix IX: School of study

	Frequency	<u>Percent</u>	Valid Percent	Cumulative Percent
School of Agriculture and <u>environmental studies</u>	9	2.3	2.3	2.3
School of Business Economics and Tourism	113	29.2	29.2	31.5
School of Education and Valid <u>lifelong studies</u>	31	8.0	8.0	39.5
school of Law Arts and Social Sciences	197	50.9	50.9	90.4
School of Pure and Applied Sciences	37	9.6	9.6	100.0
Total	387	100.0	100.0	

Appendix X: Frequency of LMS Use

	Frequency	Percent	Valid Percent	Cumulative Percent
Everyday	150	38.8	38.8	38.8
weekly	207	53.5	53.5	92.2
Valid Monthly	28	7.2	7.2	99.5
other	2	.5	.5	100.0
Total	387	100.0	100.0	

Appendix X: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
LMS perform the intended function	Between Groups	18.607	3	6.202	16.612	.000
	Within Groups	142.995	383	.373		
	Total	161.602	386			
LMS features are easy to use	Between Groups	7.441	3	2.480	4.481	.004
	Within Groups	212.001	383	.554		
	Total	219.442	386			
LMS enhance the quality of learning	Between Groups	3.763	3	1.254	2.791	.040
	Within Groups	172.103	383	.449		
	Total	175.866	386			
LMS is accessible on multiple devices	Between Groups	.896	3	.299	.449	.718
	Within Groups	255.078	383	.666		
	Total	255.974	386			
LMS make postgraduate learning easy	Between Groups	1.302	3	.434	.851	.467
	Within Groups	195.349	383	.510		
	Total	196.651	386			