Extent to which self-regulation behavior influences student online learning outcomes in public universities of Western region, Kenya

Carolyne Mukenye[1]
Rose Opiyo[2]
Manson B. Sichari[3]

[1]mukenyecarol@gmail.com
[2]ropiyo@mmust.ac.ke
[3]msinchari@mmust.ac.ke

[1,2,3]Masinde Muliro University of Science and Technology, Kenya

https://doi.org/10.51867/ajernet.6.4.26

ABSTRACT

Higher education institutions are undergoing radical transformations driven by the need to digitalize education and training processes rapidly. Universities continue to prioritize online learning as a means of meeting the diverse needs of students, ensuring accessibility, flexibility, and continuity in education. However, for students to effectively benefit from online learning, two crucial constructs play a pivotal role: academic motivation and self-regulation. These factors significantly influence students' ability to engage with, persist in, and succeed in online learning environment. Despite the growing emphasis on online education, many students in public universities in the Western region of Kenya face challenges related to self-discipline which affect their learning outcomes. The purpose of this study was to assess the impact of self-regulation strategies on students' online learning outcomes. This study was guided by self-regulation theory. A mixed-methods research design was employed, targeting 4,551 respondents, comprising 4,475 undergraduate students from the Department of Education, 24 heads of the Education Department, 39 instructors, and 4 ODEL administrators. Data was collected using questionnaires and key informant interview schedules. A pilot study was conducted to ensure reliability, with Cronbach's alpha used to test the internal consistency of research instruments. Face, content, and criterion validity of the instruments were ascertained. Data analysis involved correlation to assess relationships between variables and multiple regression to predict their interactions. The qualitative results from the interview showed that self-regulation influences students' online learning outcomes in public universities within this region. The results showed a strong positive relationship (correlation coefficients of 0.821, respectively) between students' online learning outcomes and self-regulation behavior. According to linear regression analysis, students' online learning results were positively and significantly impacted by self-regulation behavior (regression coefficients of 1.271, respectively) The study found that self-regulation explained around 55.2% of the variance in students' online learning results. For education stakeholders, these findings have important ramifications, especially when evaluating readiness for the competency-based curriculum (CBC) in Kenya by 2026, which includes the use of online learning techniques. The Teachers Service Commission (TSC), Kenya Institute of Curriculum Development (KICD), and Ministry of Education (MOE) may utilize these findings to create efficient teacher training plans for online instruction and to address challenges hindering the adoption of online learning. Enhancing students' academic motivation and self-control will be key to a successful digital learning experience.

Keywords: Public Universities, Self-Regulation Behavior, Student Online Learning Outcomes, Western Region, Kenya

I. INTRODUCTION

Higher education institutions are undergoing radical transformations driven by the need to digitalize education and training processes in record time with academics that lack innate technological capabilities for online teaching (Aheto et al., 2021). Universities are required to strive to overcome this situation to be competitive and provide high-quality education during times of rapid digital transformation, disruptive technological innovations, and accelerated change especially due pandemics such as Covid-19 (Weyage, 2023). The measure to curb Covid-19 demanded restricted physical gathering in learning environments and this paved way for online learning systems in universities (Bundi, 2024).

Higher learning institutions adopted e-learning systems to corroborate students and faculty's experiences during the COVID-19 pandemic. In a matter of weeks, entire education systems from elementary to higher education had completely adjusted to online teaching and learning (Ndwiga et al., 2024). The switch to online learning left many universities grappling academic achievement of students. Operationalized academic achievement as online learning outcomes measured by the constructs of frequency of attending online classes, taking exams, giving feedback and finally examined an analysis of results of online assessments (Mishra & Koehler, 2006).

According to United Nations Environmental, Scientific and Cultural Organization [UNESCO], Higher Education Institutions (HEIs) were closed completely in 185 countries in April 2020, affecting more than 1,000 million

learners around the globe ((Marinoni et al., 2020). The reality of the new normal caused by COVID effects, led to a radical transformation of education and training such as digital transformation in global higher education (Dwivedi et al., 2011). E-learning took over once in-person instruction was abruptly and forcibly discontinued. This pressure led to sudden pressure to quickly adjust to fully online learning environments (Carolan et al., 2020). Universities had to consider how to deliver high-quality education in the face of disruptive technological innovation, digital transformation, and rapid changes to the educational system. Many colleges struggled with disruptive educational innovation, which opened up new learning options and supplanted established teaching strategies and methods.

A review of related studies from the United Kingdom and others from Asia (Wei & Chou, 2020; Cheng, 2011; Irfan, 2019; Petrus et al., 2016) indicated that even in the developed world, e-learning still had challenges from (Klimova et al., 2022). The importance of learning outcomes based on online learning was emphasized by the studies covered in the brief. Therefore, using a case study of four public universities in the western region of Kenya, this study examined academic motivation and self-regulation as determinants of students' online learning outcomes.

Colleges and universities around the world have mostly embraced virtual lessons and Open and Distance e-learning (ODeL) by providing online courses. However, this was not the case in many public elementary and secondary schools, where classroom interactions between teachers and students were the preferred method of instruction. Kibuku et al. (2020) presented some of the challenges such as: lack of adequate e-Learning policies, inadequate Information and Communication Technology (ICT) infrastructure, the ever evolving technologies, lack of technical and pedagogical competencies and training for e-tutors and e-learners, lack of an e-Learning theory to underpin the e-Learning practice, budgetary constraints and sustainability issues, negative perceptions towards e-Learning, quality issues, domination of e-Learning aims by technology and market forces and lack of collaboration among the e-Learning participants. Studies reviewed indicated challenges but it's not clear whether they emanated from students, lecturers or systemic ones (Wakanyi, 2023).

According to Cassidy (2011), the general influences of self-regulated on learning is student knowledge about themselves, the subject area, the task, strategies for learning and the context in which they will apply learning. Other influence is intrinsic motivation to learn where students value learning and not just performance (Cassidy, 2011). Universities are still unable to find the link between motivation and online learning. The current study aims to ascertain the relationship between academic motivation, self-regulation, and learning outcomes.

1.1 Statement of the Problem

The framework of Kenya's Vision 2030 required universities to introduce self-based learning as a method for teachers to interact with students and increase accessibility to education (Amukune, 2022). The COVID-19 pandemic, however, greatly expedited the transition to online learning., which necessitated the abrupt transition to digital learning platforms. Universities had to rapidly adopt technological solutions, including Learning Management Systems (LMS), video conferencing tools, and other e-learning resources to ensure continuity in education (Kariuki et al., 2024). While this transition aimed at sustaining academic progress, it posed significant challenges, particularly for students and educators who were unprepared for such a sudden digital shift. Local studies highlighted several challenges encountered during this transition. For instance, infrastructure limitations, lack of digital literacy among both students and faculty, and internet accessibility issues were prevalent (Amukune, 2022). Additionally, student-related factors such as motivation and self-regulation played a crucial role in their ability to successfully adapt to online learning environments. Despite being digital natives, many students struggled to stay engaged in online learning due to inadequate self-discipline, low intrinsic motivation, and difficulties in managing their own learning processes (Ferrandino, 2021). According to Ferrandino's survey of 2,742 university students, 31.4% (862 students) had to retake their online exams, while 16% consistently performed poorly despite multiple attempts. Furthermore, 48% were unprepared to undertake online assessments due to challenges in interacting with digital tools effectively. Previous research have largely focused on technological and accessibility issues, with little emphasis paid to the psychological aspects of academic motivation and self-regulation as significant markers of online learning effectiveness. Examining the extent to which public university students have the self-control and drive required to thrive in online learning settings was essential in light of Vision 2030's mission to modernize education and improve the educational experience. Students may continue to experience difficulties with engagement and performance if these psychological aspects are not fully recognized and handled, undermining Vision 2030's goals of building a strong, cutting-edge educational system. Therefore, This study investigated the relationship between students' self-control and the results of online learning at public universities in Western Kenya.

1.2 Research Objectives

To ascertain the extent to which Self-regulation behavior influences student online learning outcomes in Public Universities of Western region, Kenya.

1.3 Research Hypothesis

HO₁: Students' Self-regulation strategies have no influence on their online learning outcomes in Public Universities of Western region, Kenya.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Self-Regulation Theory

Self-Regulation Theory (SRT) was initially proposed by Albert Bandura in 1986 as part of his broader work on social cognitive theory. The theory posits that individuals actively regulate their thoughts, emotions, and behaviors in pursuit of set goals. Self-regulation involves multiple constructs, including goal setting, self-monitoring, self-efficacy, self-control, and self-reflection. These constructs collectively influence an individual's ability to manage their learning processes effectively.

According to the study, self-regulation is especially important in an online learning setting because students are required to individually manage their time, motivation, and study techniques. In order to succeed academically in online learning, students must demonstrate greater degrees of self-discipline and intrinsic drive than in traditional classroom settings. Thus, in virtual learning environments, self-regulation is a key indicator of students' academic achievement.

These are some ways that the SRT structures match the study variables. The ability of students to observe and modify their emotions, behaviors, and cognitive methods in order to improve learning outcomes is known as self-regulation. Students' perseverance and involvement in online learning activities are influenced by motivation, a crucial factor in determining self-regulatory behaviors. Academic outcome, the study's dependent variable, is affected by students' levels of motivation and self-control.

The relationship between the dependent variable (online learning outcomes) and the independent factors (academic motivation and self-regulation) is explained by the hypothesis. In particular, motivated and involved students are more likely to perform well academically in online learning when they have excellent self-regulation abilities.

However, Self-Regulation Theory has some limitations when applied to this study. One major limitation is the assumption that individuals have complete control over their learning behaviors and outcomes. In an online learning environment, external factors such as internet connectivity, institutional support, and technological proficiency also play a significant role, which the theory does not fully address. Furthermore, SRT primarily focuses on motivation as a central construct but does not comprehensively explain other external influences on academic performance.

2.2 Empirical Review

2.2.1 Online Learning During the Pandemic Period

Early in 2020, the COVID-19 epidemic broke out over the world, upending established educational systems and forcing a swift switch to online schooling. To maintain educational continuity, higher education institutions including public universities in Kenya's western region adopted a variety of online learning approaches and platforms. Throughout the pandemic, universities both locally and abroad supported online learning using a range of digital communication technologies and learning management systems (LMS). Among the most popular platforms were learning management systems, video conferencing tools, content delivery systems, and institutional e-learning portals.In order to guarantee good engagement and learning results, each of these platforms needed learners to have particular abilities and attributes. There are now a number of online learning methods that require different qualities of learners to succeed (Kisanjara et al., 2017). Online learning has many benefits, but students still have to deal with concerns including the digital divide, poor internet access, inadequate study spaces, and trouble adjusting to self-paced learning. Various solutions were put in place by universities to address these issues, including recorded lectures, subsidized data bundles, and hybrid learning techniques. The pademic-related transition to online learning showed the importance academic motivation and self-control are to students' performance in online learning contexts (Matuga, 2009).

2.2.2 Influence of Self-Regulation Behavior on Students Online Learning Outcomes

Self-regulated learning is distinct from cognitive ability or academic achievement. Rather, it describes a self-guided method via which students convert their cognitive capacities into academic proficiencies relevant to a certain topic. Generally speaking, a student's self-regulated learning is influenced by their self-awareness, the task, the subject matter, their learning strategies, and the environment in which they apply their learning. Because students are inherently motivated, value learning above achievement, and take charge of their education rather than relying on outside influences, learning motivation is also essential. Willpower, or volition, is another essential element of self-regulated learning, according to Kisanjara et al. (2017).

In higher education, the concept of self-regulated learning is becoming increasingly relevant due to the unique challenges that students encounter (Cassidy, 2011). Self-regulated learning has been emphasized by several theoretical

stances, and it is generally accepted that students' views of themselves as learners are crucial to this process. This study examined the psychological ideas of self-regulation and motivation in relation to online learning outcomes.

Matuga (2009) examined the academic achievement, self-control, and goal orientation of 40 second-year US university science students enrolled in online courses. The purpose of the study was to look at how changes in goal orientation and self-regulation connect to academic success. This study was quasi-experimental and used a pretest-posttest paradigm. The target market consisted of secondary school students who were enrolled in six-week online university courses taught by a two-person team made up of a secondary classroom teacher and a university science professor. Self-report questionnaires were used to gather the data, and inferential statistics like regression analysis and correlation were used to assess the findings.

According to Cassidy (2011), self-regulated learning is becoming increasingly significant in higher education because of the unique expectations imposed on college students. With a focus on learning style, academic control beliefs, and student self-evaluation, the study sought to investigate the fundamental ideas of self-regulated learning. Multiple regression and factor analysis were used to evaluate the data, and descriptive survey research was used to recruit university students for the study.

The study found that by assisting students in creating efficient learning techniques, self-regulated learning improves academic attainment. In order to promote student autonomy and academic achievement, it suggested introducing self-regulated learning components into university courses. This study investigated the function of self-regulated learning in online learning among Kenyan university students, in relation to Cassidy's (2011) study, which concentrated on self-regulated learning in conventional higher education settings. This study also looked at other aspects such student involvement, cognitive performance anticipation, and institutional support, whereas Cassidy focused on learning styles and academic control views.

Kisanjara et al. (2017) developed an integrated model for evaluating e-learning’s impact on student achievement in Tanzanian universities. The study examined various factors, including student involvement, expectations for cognitive performance, student autonomy, contentment, pleasure, self-worth, and trust in online learning platforms. Utilizing surveys and statistical modeling methods like structural equation modeling (SEM) to examine correlations between variables, a quantitative study design was used. The results showed that pupils' academic performance was greatly impacted by these factors. According to the study, self-regulated learning techniques should be encouraged and institutional support for e-learning platforms should be strengthened.

Nduta (2019) investigated the relationship between academic achievement, self-regulated learning, and academic motivation in secondary school. The study's theoretical framework was based on self-determination theory and social cognitive theory. Secondary school students' questionnaire responses were gathered using a correlational study approach, and the results were analyzed using multiple regression models. Academic achievement, self-regulated learning, and academic motivation were found to be significantly correlated. The innate drive for achievement was the most significant predictor of academic accomplishment among all the elements of academic motivation. The study discovered that academic motivation and self-regulation differed by gender, with male students being favored. It suggested that in order to improve student success, schools should encourage academic motivation and self-regulated methods of learning.

Nduta (2019) investigated secondary school pupils; this study concentrated on college students, who had more studying freedom. Unlike Mutwelele's study, which looked at academic accomplishment in general, this one looked exclusively at the results of online learning in public universities. Furthermore, by combining data from several sources, such as administrators, lecturers, and students, to triangulate results, Mutwelele's research was filled in. The reviewed studies highlighted various aspects of self-regulated learning, but gaps remained regarding its influence on online learning outcomes in Kenyan public universities.

III. METHODOLOGY

3.1 Research Design

The study adopted a mixed research design, incorporating both quantitative and qualitative approaches to provide a comprehensive understanding of how academic motivation and self-regulation predict students’ online learning outcomes in public universities of the Western region of Kenya. Quantitative data were collected using closed-ended questionnaires to generate measurable and statistically analyzable responses on students' levels of motivation, self-regulatory behavior, and academic performance (Creswell & Clark, 2018). Complementing this, qualitative data were gathered through scheduled interviews, which offered deeper insights into students’ personal experiences, contextual challenges, and perceptions related to online learning. This combination of methods allowed for both breadth and depth in data collection, enabling the researcher to validate and enrich the quantitative findings with qualitative perspectives (Dawadi et al., 2021).

3.2 Target Population

The study focused on the 4551 respondents comprising of undergraduate students from the school of education and social sciences in all the public universities in Western region of Kenya (2317 students from MMUST, 1110 from KIBU, 587 from KAFU and 461 from Alupe totaling 4475 undergraduate students). The target population comprised of 24 heads of education department, 39 instructors of the departments, and 4 ODEL administrators.

3.3 Sampling Techniques and Sample Size

Sampling involves making of conclusions about an entire population using a subset of the population (Orodho, 2009). The respondents were undergraduate students, instructors, and ODEL administrators of public Universities in Western region, Kenya.

The study used public Universities in Western region of Kenya as the study unit as justified in the study area. The researcher further purposively sampled out the school of education in each of the universities as the researcher established that this was the only school across the four universities that had similar courses to ensure uniformity of the study. The researcher further purposively sampled only the courses that will have online learning during the study duration. This therefore meant that the students in the sampled courses and the respective instructors formed the respondents' base in the study. This information was sourced from the undergraduate students, departmental heads, instructors and ODEL administrators.

367 undergraduate students were selected by purposive sampling based on the nature of their academic programs, specifically targeting those enrolled in courses that had actively incorporated online learning platforms and virtual instruction. This technique was specifically chosen to guarantee that only students who had regular and pertinent experience with online learning environments were included in the study. This was because they were in the best position to offer knowledgeable insights on how academic motivation and self-regulation affect online learning outcomes. Individual students from each course were chosen using simple random sampling after the pertinent courses within the four chosen universities were determined. By giving every eligible student in the targeted courses an equal chance of being included in the study, this probability sampling strategy was used to minimize sampling bias and improve the findings' generalizability within the sampled population.

Census sampling involves collecting data from every individual within a specified population, making it an ideal method when the population size is small and manageable. In this study, census sampling was the most appropriate method for selecting the 24 heads of education departments, 39 instructors, and 13 ODEL administrators because it ensured that every key stakeholder involved in online education within the public universities in the Western region of Kenya is included. This approach guaranteed comprehensive and accurate data, as it captured all perspectives without the risk of omission that might occur with other sampling methods (Verma et al., 2024).

3.4 Research Instruments

Interviews and questionnaires were used as the main instruments of study. Data from key university respondents was collected using these methods.

Questionnaire: The researcher issued the students with questionnaires because of ease of administration through course instructors: Time and money was saved as the number of students is quite high. Section A of the questionnaire established students' demographics. Section B sought to find out self-regulation strategies adopted by the student. The student selected the method she or he has adopted to regulate self. Section C established academic motivation on learning, Section D examined the relationship between academic achievement, self-regulation, and online learning outcomes. In order to assess students' learning outcomes, the study suggests modifying Bloom's taxonomy of learning outcomes domains to include both positive and negative items distributed among three domains (cognitive, emotional, and psychomotor). According to Creswell & Creswell (2017), the response responses for these items were on a four-point Likert scale: "Strongly Disagree" (SD = 1), "Disagree" (D = 2), "Agree" (A = 3), and "Strongly Agree." By adapting McClelland's overviews into 15 positive statements that were distributed over.

Key Informant Interview Guides: An in-person interview was used in this study because they gave in-depth information on the subject being studied (Best & Kahn, 2011). This method contributed to collection of qualitative data. An interview with a subject matter expert can give one meaningful insights that a generalized public source won't be able to provide (Best & Kahn, 2011). Interviews were carried out in person or on telephone. They had open-ended questions to get meaningful information about the topic. The interviews were administered to 24 heads of department, 39 departmental Instructors and 4 ODEL administrators because they handled the learners on a day-to-day basis as the online classes went on. The interviews established self-regulation strategies adopted by the students, the influence of academic motivation on learning, and the relationship between self-regulation, academic achievement and online learning outcomes of public Universities in Western region, Kenya.

3.5 Validity of Research Instruments

The validity of the research instruments in this study, which examined academic motivation and self-regulation as predictors of students' online learning outcomes in public universities of the Western region of Kenya, was assessed through expert analysis to ensure accuracy and relevance (Mugenda & Mugenda, 2003). Subject matter experts in educational psychology, online learning, and research methodology were consulted to evaluate the content validity of the instruments. These experts reviewed each item to ensure it appropriately represented the theoretical constructs of academic motivation, self-regulation, and learning outcomes, and confirmed that the items were clear, culturally appropriate, and aligned with the study's objectives. Their feedback was used to refine the instruments by eliminating or modifying ambiguous or irrelevant items. This expert validation process enhanced the content and face validity of the instruments, ensuring that that the tools measured what they were supposed to measure within the specific context of Kenyan public universities (Kothari, 2019).

3.6 Reliability of Research Instruments

The reliability of the research instruments in this study referred to the consistency and stability of the measurements of academic motivation, self-regulation, and online learning outcomes among students in public universities in the Western region of Kenya (Mugenda & Mugenda, 2003). To ensure reliability, the instruments were pilot-tested on a representative sample to identify any ambiguities or inconsistencies in the items. Internal consistency was measured using Cronbach's alpha coefficient, with acceptable values (typically above 0.7) indicating that the items within each construct reliably measured the same underlying concept. Test-retest reliability may also have been employed to assess the stability of the instruments over time. The findings from these reliability tests ensured that the data collected were dependable and could be replicated in similar educational contexts.

3.7 Data Collection Procedure

The researcher will physically distribute the questionnaires to selected students in public universities within the Western region of Kenya, ensuring that each participant receives clear instructions on how to complete the tool. A period of two weeks will be allowed for participants to fill out the questionnaires at their convenience, providing sufficient time for thoughtful and accurate responses. During this period, the researcher will conduct follow-up visits and reminders to encourage timely completion and maximize the response rate. In addition to the questionnaires, interviews will be conducted with a purposively selected group of participants to gather more detailed qualitative data on academic motivation, self-regulation, and online learning outcomes. All data collection activities will be carried out in adherence to ethical standards, ensuring voluntary participation, confidentiality, and respect for the respondents' time and autonomy.

3.8 Data Analysis

This study used a mixed methods approach - two different kinds of data were examined. Statistics which were both descriptive and inferential were generated.

Quantitative Data Analysis: Before the qualitative data was loaded into SPSS version 27 for analysis, it was cleaned, sorted, and coded to guarantee correctness and consistency using the 5-point Likert scale questionnaires. To draw attention to and condense the key features of the data, descriptive statistics were used. Frequencies and percentages were calculated to show how responses were distributed and to uncover trends and patterns among students in relation to academic motivation, self-regulation, and online learning outcomes. The mean and standard deviation, which assessed the central tendency and variability of the responses, were computed to provide a more thorough picture of the students' overall experiences.

Inferential statistics were used to look at how the variables related to one another. The degree and direction of the connections among academic motivation, self-regulation, and online learning outcomes were assessed using Pearson product-moment correlation. This approach shed light on the degree of correlation between these variables as well as whether better learning outcomes were linked to higher levels of motivation and self-regulation. Understanding the cumulative impact of these factors on online learning achievement required knowing how much each of them influenced the others, which was made possible by the correlation analysis.

In addition, ANOVA (Analysis of Variance) was conducted to test whether significant differences existed in online learning outcomes based on varying levels of self-regulation and academic motivation. This analysis allowed for comparisons between different groups of students, showing whether those with higher self-regulation or motivation performed better in online learning environments. To further predict the impact of these independent variables on online learning outcomes, linear regression analysis was applied. This statistical technique helped estimate how much of the variation in learning outcomes could be explained by self-regulation and academic motivation. The Model Summary in SPSS provided a measure of how well the regression model fit the data, indicating the predictive power of these factors on students' online learning performance.

Qualitative Data Analysis: The qualitative data collected through interviews was analyzed using thematic analysis, a method that allows for identifying, analyzing, and reporting patterns or themes within the data. The process began with transcribing the interviews, followed by familiarizing the researcher with the data by reading through the responses several times. Initial codes were generated based on recurring ideas or concepts mentioned by the participants, such as challenges in online learning, motivational factors, and self-regulation strategies. These codes were then grouped into broader themes that reflected the underlying meanings and experiences of students regarding online learning outcomes. Thematic analysis provided a rich, detailed understanding of how students perceived their academic motivation and self-regulation in the context of online learning.

Triangulation was employed to ensure the credibility and validity of the findings by cross-checking the qualitative data with the quantitative results. The researchers compared the themes identified through the interview analysis with the quantitative data obtained from the questionnaires. For instance, themes related to self-regulation and motivation were compared with the quantitative measures of these variables to identify areas of convergence or divergence. This process helped to confirm the consistency of the findings across different data sources, reinforcing the reliability of the conclusions drawn from both the qualitative and quantitative data. By combining both data types, triangulation ensured a more comprehensive and accurate understanding of how academic motivation and self-regulation influenced students' online learning outcomes.

IV. FINDINGS & DISCUSSIONS

4.1 Demographic Information

4.1.1 Gender of the Respondents

Respondents were asked to identify their gender. The results shown in Figure 1 indicate that 57.9% of the population was male and 42.1% was female.

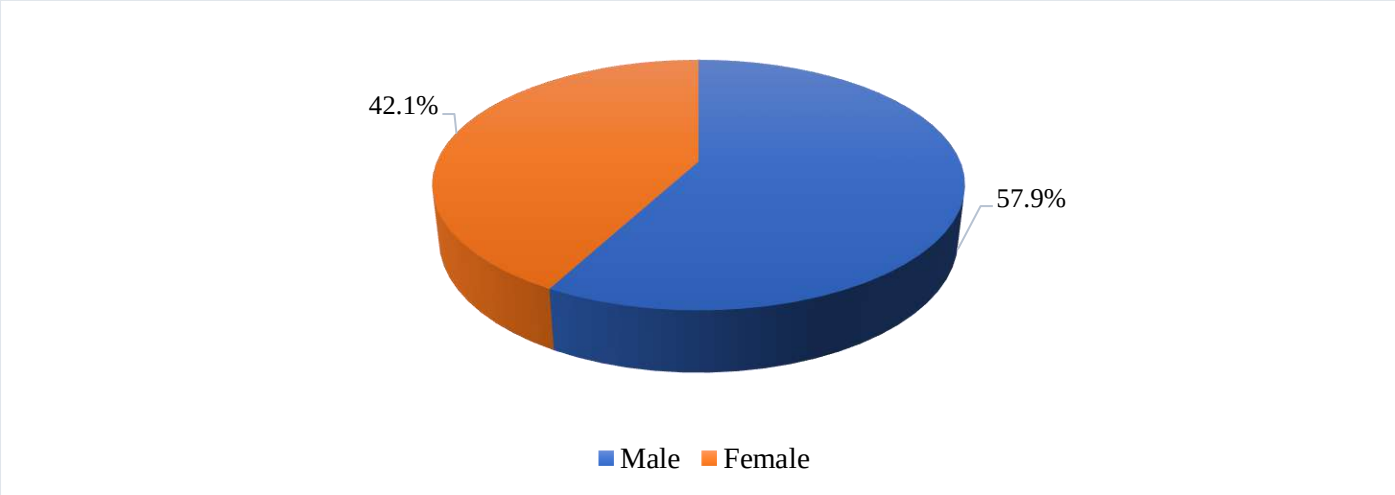

Figure 1
Gender of the Respondents

4.1.2 Age of the Participants

The respondents were asked to identify their age bracket. The findings in Table 1 shows that 54.0% were between 15-19 years, 33.2% were between 20-24 years and 12.8% were above 25 years.

Table 1
Age of the Participants

Age	Frequency	Percent
15-19 years	164	54.0
20-24 years	101	33.2
Above 25 years	39	12.8
Total	**304**	**100.0**

4.1.3 Year Admitted

Respondents were asked to indicate the year they were admitted in Universities. The results in Table 4.3 shows that 20.1% were admitted in 2024/2025, 21.7% were admitted in 2023/2024, 24.3% were admitted in 2022/2023, 26.6% were admitted in 2021/2022 and 7.2% were admitted in 2020/2021 or earlier.

Table 2

Year Admitted

Year Admitted	**Frequency**	**Percent**
2024/2025	61	20.1
2023/2024	66	21.7
2022/2023	74	24.3
2021/2022	81	26.6
2020/2021 or earlier	22	7.2
Total	**304**	**100.0**

4.14. Previous Academic Performance

The aim of the study was to find out the respondents' previous levels of education. According to the findings in Figure 2, 16.8% of respondents performed below average, 36.2% performed average, 30.3% performed above average, and 16.8% performed very well.

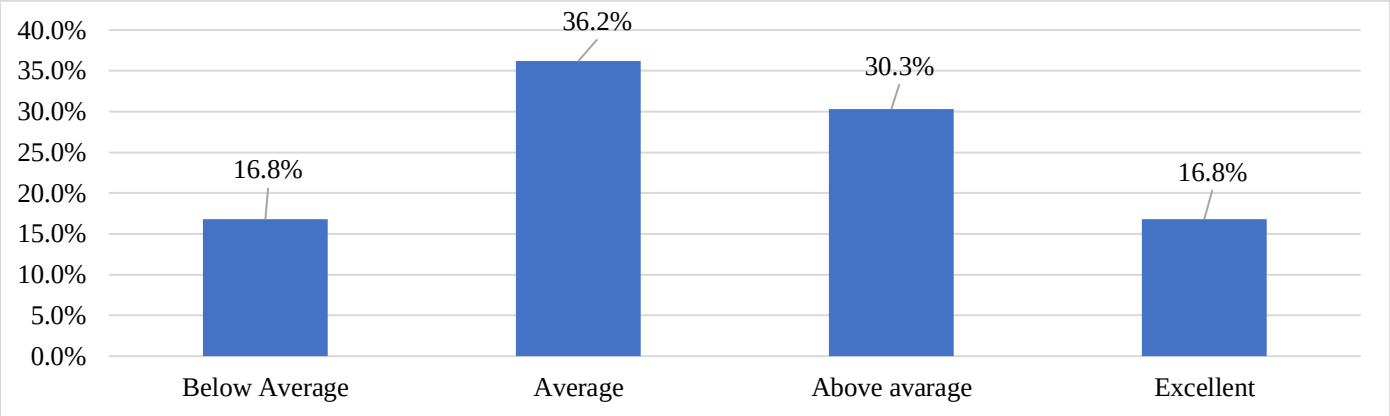

Figure 2

Previous Academic Performance

4.1.5 Access to Technology

Participants were asked on whether they have access to technology such as computer and smartphone. The results in Figure 3 shows that 56.9% had no access to technology while 43.1% had access to technology.

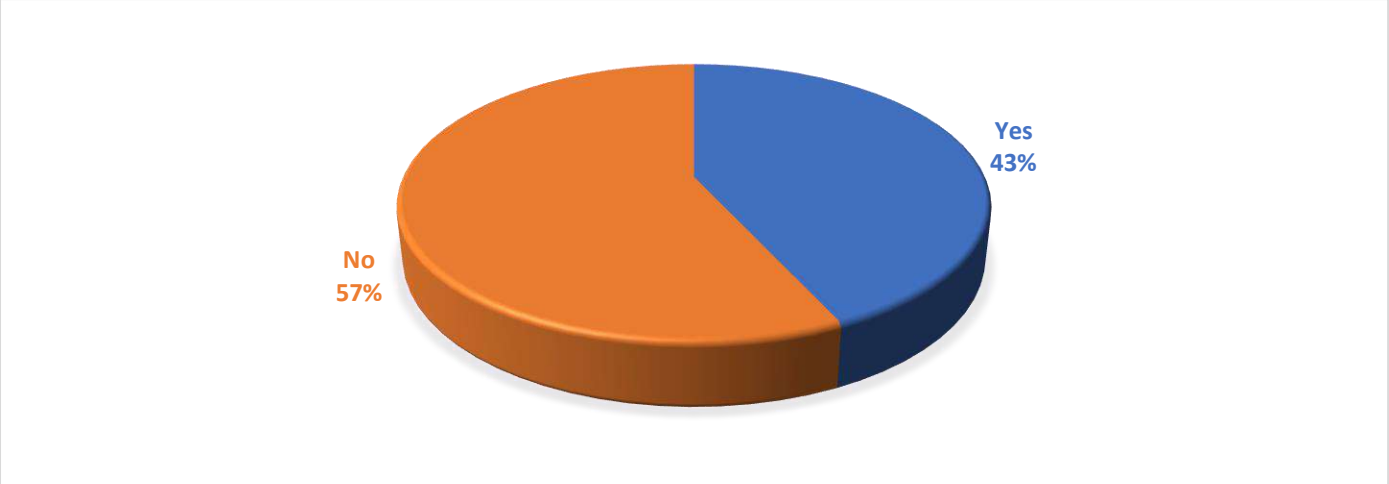

Figure 3

Access to Technology

4.1.6 Self-regulation strategy

Participants were asked on whether they have self-regulation strategy. From the findings in Figure 4, 12.2% had no self-regulation strategy, 30.6% occasionally had self regulationstrategy,34.5% often had self-regulation strategy while 22.7% always had self-regulation strategy.

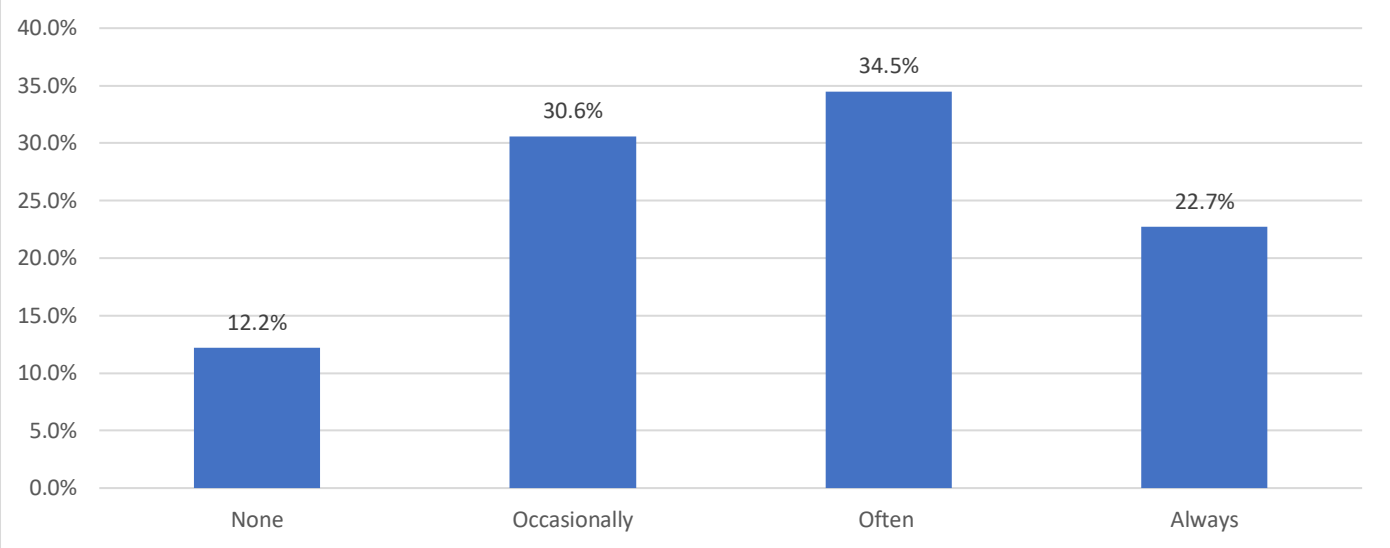

Figure 4
Self-Regulation Strategy

4.2 Descriptive Statistics

Respondents were asked to rate various statement with the aim of identifying the extent to which self-regulation behaviour influences student online learning outcomes. The results were presented in Table 3 below.

Table 3
Extent to which Self-Regulation Behavior Influences Student Online Learning Outcomes

No.	Statement	Percentages and frequencies					Mean	Std dev.
		1 SD	2 D	3 N	4 A	5 SA		
1.	I am able to fulfill my personal tasks and deadlines for online assignments	81 (26.6%)	89 (29.3%)	28 (9.2%)	61 (20.1%)	45 (14.8%)	2.67	1.432
2.	I effectively manage my time for attending online classes and studying	77 (25.3%)	88 (28.9%)	23 (7.6%)	61 (20.1%)	55 (18.1%)	2.77	1.476
3.	I persist in completing online coursework even when faced with challenges	63 (20.7%)	69 (22.7%)	16 (5.3%)	79 (26.0%)	77 (25.3%)	3.12	1.523
4.	I set personal deadlines that help me stay on track with my online coursework	65 (21.4%)	61 (20.1%)	18 (5.9%)	82 (27.0%)	78 (25.7%)	3.15	1.528
5.	I review and adjust my learning strategies if I find I am not making sufficient progress	56 (18.4%)	63 (20.7%)	21 (6.9%)	89 (29.3%)	75 (24.7%)	3.21	1.479
6.	Do you set specific goals for your online courses	1 Yes			2 No		1.64	0.707
		149 (49.1%)			155 (50.9)			
7.	How often do you create a study schedule for your online learning	Never	Occasionally	Sometimes	Frequently		2.64	0.999
		43 (14.1%)	97 (31.9%)	91 (29.9%)	73 (24.0%)			
8.	How satisfied are you with your ability to monitor your progress	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied		2.32	1.059
		98 (32.2%)	93 (30.6%)	74 (24.3%)	39 (12.8%)			

The purpose of the study was to determine if students were able to complete their personal assignments and fulfill deadlines for their online assignments. The results showed that 26.6% strongly disagreed, 29.3% disagreed, 9.2% remained neutral, 20.1% agreed and 14.8% strongly agreed that they were able to fulfill their personal tasks and deadlines for online assignments. The results indicate that most students contended they were unable to meet their personal tasks and deadlines for online assignments, suggesting difficulties in self-regulation that may impede good online learning outcomes. Individuals who consented exhibited a degree of self-discipline and time management,

essential for achieving academic objectives in a virtual environment. Neutral reactions indicate ambiguity or variability in self-regulatory behaviours. The average score of 2.67 and a standard deviation of 1.432 suggest a generally inadequate capacity to meet deadlines, accompanied by significant heterogeneity in students' self-regulation behaviours.

Respondents were asked about how well they manage their time so they can study and attend online programs. According to the results, 38.2% agreed and strongly agreed that they efficiently manage my time so that I may attend online classes and study, whereas 54.2% disagreed and strongly disagreed and 7.6% stayed neutral. The findings suggest significant difficulties with self-regulation that may have a negative impact on the outcomes of their online learning, as the majority of students did not think they were able to efficiently manage their time for attending online classes and studying. Those who gave their consent had effective time management skills, suggesting a higher likelihood of achieving positive academic outcomes. Indecisiveness or inconsistent time management techniques are suggested by neutral answers. The average score of 2.77 and a standard deviation of 1.476 suggest a typically low level of time management efficacy among students, accompanied by significant variability in their self-regulatory skills.

The results above were in line with interview responses obtained from heads of department where they were asked to state how students' self-regulation skills (such as time management and goal setting) affect their engagement and performance in online courses. HOD1 stated that;

> *"Effective time management and goal-setting skills significantly enhance students' engagement and performance by ensuring they meet deadlines and stay focused. Those lacking these skills often struggle with participation and fall behind in their coursework."*

The results were also supported by the responses obtained from ODEL1 who stated;

> *"Students often use planners, digital calendars, and reminders to manage their time. However, some struggle with procrastination due to competing priorities or lack of discipline. Those who successfully allocate time for learning activities tend to perform better in their coursework."*

The study intendent to find on whether respondents persist in completing online coursework even when faced with challenges. The findings shows that 43.4% disagreed, 5.3% were neutral and 51.3% agreed that they persist in completing online coursework even when faced with challenges. The results indicate that most students concurred that continue to complete online assignments despite encountering difficulties, demonstrating significant self-regulation and resilience, essential for achieving excellent online learning outcomes. Those who dissent exhibit a deficiency in perseverance, which may obstruct their capacity to attain academic objectives. Neutral answers indicate ambiguity or intermittent endurance amid adverse circumstances. The mean score of 3.12 and a standard deviation of 1.523 indicate a moderate degree of perseverance among students, accompanied by considerable diversity in their self-regulatory behaviour.

The aforementioned results were corroborated by McClelland and Atkinson's Need Achievement Theory, which highlights the importance of intrinsic motivation and perseverance in reaching objectives. According to this theory, people who have a high need for achievement are motivated to overcome obstacles, exhibiting resilience and self-control to achieve success; students who persevered in finishing online coursework in spite of difficulties exemplify this high achievement drive, demonstrating their dedication to academic goals; on the other hand, those who lack perseverance are associated with a lower need for achievement, which may impede their learning outcomes.

Respondents were asked on whether they set personal deadlines that help them stay on track with their online coursework. The outcomes show that 41.5% disagreed, 5.9% remained neutral, 52.7% agreed that they set personal deadlines that help me stay on track with my online coursework. The results indicate that most students concurred that they establish personal deadlines to maintain progress in their online coursework, reflecting proactive self-regulation behaviours that improve task management and lead to superior online learning outcomes. Individuals who dissent may encounter difficulties with time management and self-discipline, perhaps impeding their academic advancement. Neutral responses indicate inconsistency or ambiguity in employing deadlines as a self-regulation tactic. The mean score of 3.15 and a standard deviation of 1.528 suggest a moderate inclination to establish personal deadlines, accompanied by significant heterogeneity across students.

The findings are in accordance with those of Matuga (2009), who discovered that self-regulation, including setting personal deadlines, significantly enhances academic success. According to Matuga, goal-oriented behaviors improve time management and job completion, which is crucial for online learning because independence is essential. 52.7% of students agreed, according to your research, that using deadlines to stay on course shows proactive self-regulation. However, the answer variability shows that students' levels of self-discipline vary, with a mean of 3.15 and a standard deviation of 1.528.

The research sought to find on whether participants review and adjust their learning strategies if they find they are not making sufficient progress. The results show that 18.4% strongly disagreed, 20.7% disagreed, 6.9% remained neutral, 29.3% agreed and 24.7% strongly agreed that they review and adjust their learning strategies if they find they are not making sufficient progress. The results indicate that most students concurred that modify their learning tactics when progress is inadequate, demonstrating robust self-regulation skills that facilitate adaptive learning and enhance

online learning outcomes. Individuals who disagreed may exhibit inflexibility in their learning methodologies, which could hinder their capacity to surmount obstacles. Neutral replies indicate ambiguity or variable approaches in strategic modification. The mean score of 3.21 and a standard deviation of 1.479 indicate a modest degree of flexibility, accompanied by considerable heterogeneity in students' self-regulatory behaviours.

Respondents were asked on whether they set specific goals for their online courses. The findings showed that 49.1% set specific goals for online courses while 50.1% of the respondents do not set specific goals for online courses. The findings indicate that although some students establish specific goals for their online courses, demonstrating a proactive self-regulation approach that can enhance their learning outcomes, a marginally larger segment fails to set such goals, suggesting a possible deficiency in their self-regulation practices. The mean of 1.64 indicates a tendency towards not establishing precise goals, while the standard deviation of 0.707 reflects significant diversity in the replies. This suggests that self-regulation behaviours vary among students, potentially hindering their capacity to attain optimal learning results.

The above findings were supported by the findings from interview where lecturers were asked to state specific self-regulation behaviors they have observed in students that seem to impact their online learning outcomes. Lecturer1 stated that

> *"Many students exhibit behaviors such as setting specific goals, creating schedules, and prioritizing tasks, which positively impact their online learning outcomes. Conversely, a lack of discipline and procrastination often result in poor performance and incomplete tasks."*

Respondents were asked on how often they create a study schedule for their online learning. The results showed that 14.1% never create a study schedule for your online learning, 31.9% occasionally create, 29.9% sometimes create and 24.0% frequently create a study schedule for their online learning. The results indicate that students exhibit differing degrees of self-regulation in designing study regimens for their online education. Individuals who do not establish plans may lack the requisite planning abilities for successful time management, whereas those who sporadically generate schedules exhibit inconsistent self-regulation that may impede prolonged academic achievement. Students who regularly formulate schedules demonstrate robust self-regulation, which likely results in improved learning outcomes. The mean of 2.64 indicates that the majority of students engage in schedule creation between occasionally and sometimes, while the standard deviation of 0.999 reflects considerable variety in self-regulation activities among the respondents.

Respondents were asked to state how satisfied they are with their ability of monitoring their progress. The outcomes shows that 32.2% are very dissatisfied, 24.3% are dissatisfied, 24.3% are satisfied, 12.8% were very satisfied. The results indicate that a considerable number of students express dissatisfaction with their capacity to track their progress, suggesting inadequate self-regulation skills that could adversely affect their online learning results. In contrast, individuals who are satisfied or highly satisfied exhibit enhanced self-monitoring abilities, which are crucial for monitoring and attaining learning objectives. The mean of 2.32 suggests that the majority of students exhibit dissatisfaction, while the standard deviation of 1.059 indicates significant variability in satisfaction levels, underscoring the differing self-regulation abilities among the respondents.

The aforementioned results were corroborated by the Self-Regulation Theory, which emphasizes the significance of people's capacity to track and assess their progress towards objectives. This idea holds that self-monitoring is an essential part of good self-regulation, allowing students to spot weaknesses and modify their approach to perform better. While satisfied students exhibit higher self-regulatory skills—which are crucial for tracking progress and reaching targeted learning outcomes dissatisfied students may find it difficult to match their actions with academic objectives.

Respondents were asked to state on whether they seek help from peers or instructors when faced with challenges on their online studies. The findings indicate that certain students proactively seek assistance from peers or instructors when encountering challenges, thereby employing a self-regulation strategy that can improve their online learning outcomes. Conversely, others refrain from seeking help, which may hinder their capacity to surmount difficulties and achieve academic success. This indicates that self-regulation behaviours, such as soliciting help, are not consistently employed, potentially leading to disparate academic achievement levels among students in online learning contexts.

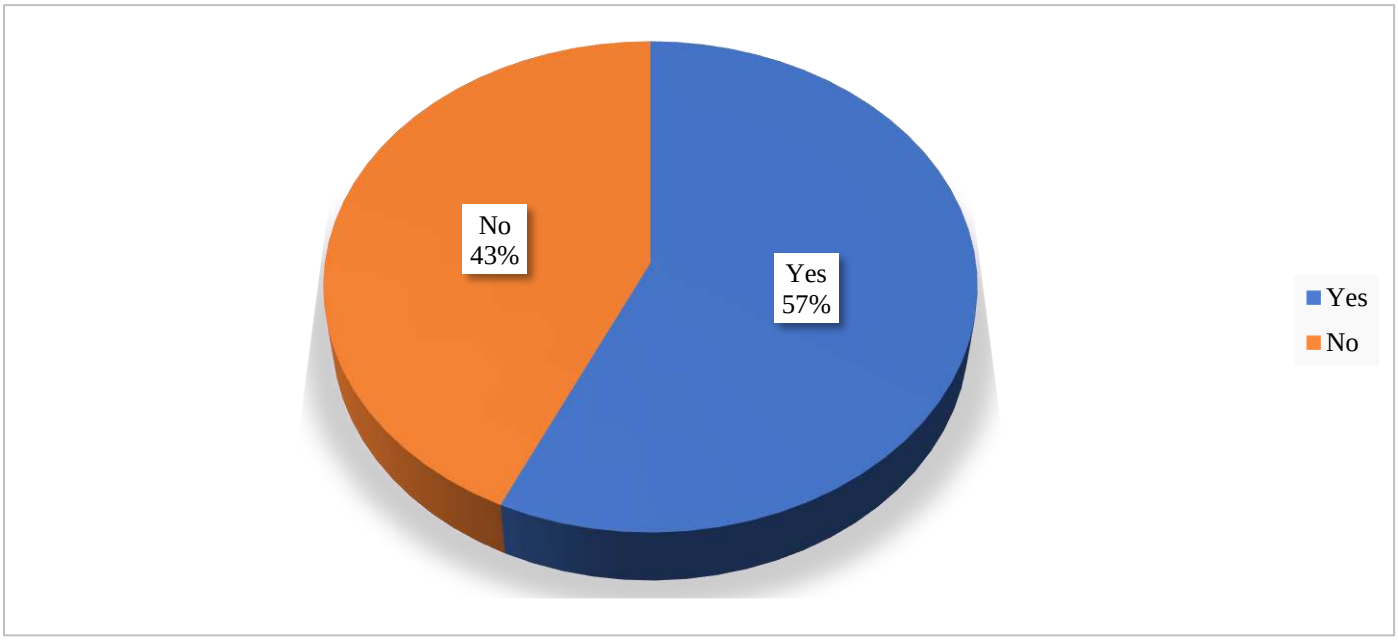

Figure 5
Seek help from Peers or Instructors

The aforementioned results concurred with those of Nduta (2019), who carried out research to ascertain the function of self-regulated learning and academic motivation as predictors of academic success. According to the study, adolescents who actively used self-regulation techniques like asking for assistance from teachers or peers performed better academically. On the other hand, pupils who did not employ these tactics frequently found it difficult to overcome obstacles, which led to poorer academic achievement. This emphasizes how important self-regulation is to improving learning results.

Respondents were asked on whether they eliminate distractions when studying online. The results shows that 57.9% eliminate distractions while 42.1% do not eliminate distractions when studying online. The outcomes indicate that most students effectively remove distractions while studying online, demonstrating robust self-regulation that can enhance their learning outcomes. Conversely, students who fail to minimize distractions may encounter difficulties in sustaining focus, thus impairing their online learning effectiveness. This indicates that proficient self-regulation, including the reduction of distractions, is essential for enhancing students' concentration and success in online learning settings.

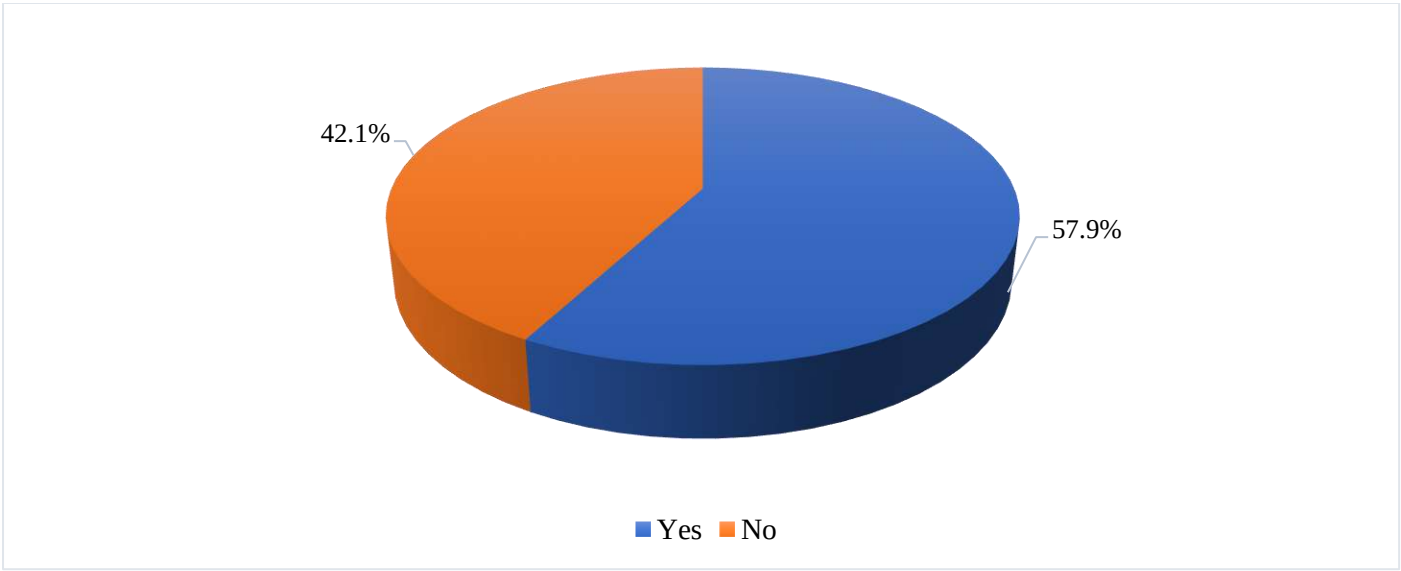

Figure 6
Eliminate Distractions

The above findings were supported by the interview response obtained from Odel facilitators when they were asked about the challenges that students face in staying focused on their online learning tasks. One of the ODEL2 stated that;

"Distractions from social media, household responsibilities, and poor internet connectivity are common challenges. Additionally, the lack of physical interaction with peers and instructors reduces engagement, making it harder for students to stay focused during online sessions."

4.3 Inferential Statistics

4.3.1 Correlation between Self-Regulation Behavior and Online Learning Outcomes

To determine the direction and degree of the association between student online learning results and self-regulation behaviour, Pearson product moment correlation was used in public universities in Kenya's Western region. The results were presented in Table 4.

Table 4

Correlation between Self-Regulation Behavior and Online Learning Outcomes

	Online learning outcomes
Self-regulation behavior	0.733 (0.000)

The correlation coefficient of 0.733 suggests a strong positive link, indicating that students' online learning outcomes improve in tandem with improvements in their self-regulation behaviour. The association appears to be statistically significant based on the p-value of 0.000, which is less than the significance level of 0.05. This suggests that improving students' online learning results requires self-regulation behaviour, which includes the capacity to set objectives, manage time, and track progress. Thus, developing self-regulation abilities may be a useful tactic to raise students' academic achievement in distance learning settings.

4.3.2 Model Summary for Self-Regulation Behavior

The model summary highlights the connection between students' online learning outcomes and their self-regulation behaviour, giving a broad overview of the regression model's fit. The results were shown in Table 5.

Table 5

Model Summary for Self-Regulation Behavior

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.743[a]	.552	.531	.237

The two variables have a substantial positive association, as indicated by the R-value of 0.743, which suggests that self-regulation behaviour is a significant predictor of online learning results. With a R Square value of 0.552, the model's explanatory power is moderate to strong, as self-regulation behaviour accounts for 55.2% of the variation in students' online learning results. The average gap between the observed values and the regression line is represented by the standard error of 0.237, which indicates a respectable degree of accuracy in forecasting online learning outcomes based on self-regulation behaviour. These findings suggest that students' academic performance in online learning settings may be enhanced by interventions targeted at enhancing their self-regulation abilities. Self-regulation behaviour also appears to have a significant impact on online learning outcomes.

4.4 ANOVA Test for Self-Regulation Behavior

The ANOVA test is used to assess if self-regulation behaviour and students' online learning outcomes are statistically related. The p-value of 0.003, which is below the significance level of 0.05, and the F value of 25.47, which is higher than the necessary F value of 3.86, both show that the model is statistically significant. This suggests that students' online learning outcomes can be significantly predicted by their self-regulation behaviour, which supports the particular goal that self-regulation affects academic achievement in online learning settings. The results were shown in Table 6.

Table 6
ANOVA Test for Self-Regulation Behavior

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.872	1	17.872	25.47	.003[b]
	Residual	211.859	302	0.702		
	Total	**229.731**	**303**			

4.5 Regression Analysis for Self-Regulation Behavior

In this study, the regression analysis is used to assess how academic motivation affects students' online learning results in public universities located in Kenya's West area. The results were as shown in Table 7.

Table 7
Regression Analysis for Self-Regulation Behavior

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	2.791	0.752	3.711	.001
	SRB	1.137	0.251	4.528	.007

The linear regression model is as shown;
Y=2.791 + 1.137 SRB……Equation 4.1

When self-regulation is zero, the expected value of students' online learning results is represented by the beta constant of 2.791. This figure represents the basic level of online learning results when self-regulation is absent. Given that the T value of 3.711 is higher than 1.649, the beta constant is considered statistically significant. Additional evidence for the constant's relevance comes from the p-value of 0.001, which is below the 0.05 significance level. Therefore, even when self-regulation is not present, the constant has a significant impact on the dependent variable (online learning results).

For every unit increase in self-regulation, the online learning results changes, as indicated by the regression coefficient of 1.137. The statistical significance of the regression coefficient is demonstrated by the T value of 4.528, which is significantly higher than the critical value of 1.649. Additionally, the p-value of 0.007 is below 0.05, indicating a substantial correlation between online learning outcomes and self-regulation. This implies that students' online learning outcomes improve in tandem with their level of self-regulation behaviour.

The null hypothesis that self-regulation has no significant impact on students' online learning outcomes was rejected. These results imply that self-regulation strategies are a significant and positive predictor of online learning outcomes, emphasizing the importance of enhancing self-regulation skills to improve students' academic performance in online learning environments.

The results above aligned with Ndwiga et al. (2024) that looked at the relationship between academic accomplishment and self-regulated learning and academic motivation. Mutwelele came to the conclusion that improving academic results required the use of self-regulation techniques, such as goal-setting, self-monitoring, and modifying teaching methods. The study also highlighted that motivated students were more likely to use effective self-regulation strategies, which improved their performance on academic assignments, especially in self-directed learning settings like online courses.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

Descriptive data showed that most participants agreed that students' self-regulation habits have an impact on their online learning results. It was evidenced by the fact that most of them said they still complete their online courses despite challenges. Self-regulation was positively and significantly correlated with students' online learning results, according to the correlation study. According to regression analysis, self-regulation had a favorable and substantial influence on students' online learning outcomes. Consequently, the study disproved the null hypothesis that self-regulation had no discernible effect on students' online learning by showing that the level of self-regulation behavior had a positive and significant impact on students' online learning outcomes.

5.2 Recommendations

According to the study's findings, the majority of participants were unable to complete their personal responsibilities and meet the due dates for their online assignments. It is consequently advised that university

administration carry out focused interventions to improve students' self-regulation abilities, like time management classes and online task tracking platforms, to help students meet deadlines and complete their own projects for online courses. The overall results of online learning would be enhanced by this.

The study findings showed that most of the respondents do not set personal deadlines that help them stay on track with their online coursework. It is therefore recommended that management of public universities implement training programs that focus on developing self-regulation skills among students, specifically emphasizing the importance of setting personal deadlines to enhance time management and ensure better online learning outcomes

The findings indicated that when studying online, the majority of respondents do not block out distractions. Therefore, it is advised that public university administrations have policies and programs in place to educate students useful self-regulation skills, including how to control distractions when learning online. In order to enhance overall learning results, this could involve developing time management skills, setting up comfortable study spaces, and encouraging accountability.

REFERENCES

Aheto, S. P. K., Barfi, K. A., Kwesi, C., & Nyagorme, P. (2024). Relationships between online self-regulation skills, satisfaction, and perceived learning among distance education learners. *Heliyon, 10*(8), 1–10.

Amukune, S. (2022). Mastery motivation and executive functions as school readiness factors: Enhancement of school readiness in Kenya [Doctoral dissertation, Szegedi Tudomanyegyetem].

Best, J., & Kahn, J. (2011). *Research in education* (10th ed.). Pearson.

Bundi, R. K. (2024). Academic motivation and achievement emotions as predictors of self-regulated learning among Form Three students in Nyeri County, Kenya [Doctoral dissertation, Kenyatta University].

Carolan, C., Davies, C. L., Crookes, P., McGhee, S., & Roxburgh, M. (2020). COVID-19: Disruptive impacts and transformative opportunities in undergraduate nurse education. *Nurse Education in Practice, 46*, Article 102807. https://doi.org/10.1016/j.nepr.2020.102807

Cassidy, S. (2011). Self-regulated learning in higher education: Identifying key component processes. *Studies in Higher Education, 36*, 989–1000. https://doi.org/10.1080/03075079.2010.503269

Cheng, E. (2011). The role of self-regulated learning in enhancing learning performance. *International Journal of Research and Review, 6*(1), 45–49.

Creswell, J. W., & Clark, L. P. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-methods research: A discussion on its types, challenges, and criticisms. *Journal of Practical Studies in Education, 2*(2), 25–36.

Dwivedi, Y., Rana, N., Chen, H., & Williams, M. (2011). A meta-analysis of the unified theory of acceptance and use of technology (UTAUT) in governance and sustainability in info systems. In Springer (pp. xx–xx). https://doi.org/10.1007/978-3-642-24148-2_10

Ferrandino, J. (2021). Student achievement in undergraduate statistics: The potential value of allowing failure. *ERIC Education*.

Irfan, T. (2019). The interconnection of motivation and self-regulated learning among university level EFL students. *English Language Teaching, 12*(4), 105. https://doi.org/10.5539/elt.v12n4p105

Kariuki, A., Onyango, J., & Ndirangu, M. (2024). Relationship between self-efficacy and secondary school students' academic achievement in Kiswahili language skills in Nakuru County, Kenya. *Journal of Education and Practice, 4*(1), 65–74.

Kibuku, R., Ochieng, D., & Wausi, A. (2020). E-learning challenges faced by universities in Kenya: A literature review. *The Electronic Journal of E-learning, 18*(2), 150–161. https://doi.org/10.34190/EJEL.20.18.2.004

Kisanjara, S., Tossy, T., Sife, A., & Msanjila, S. (2017). An integrated model for measuring the impacts of e-learning on students' achievement in developing countries. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 13(3), 109–127.

Klimova, B., Gerniak, E., & Dziuba, S. (2022). University students and their ability to perform self-regulated online learning under the COVID pandemic. *Frontiers in Psychology, 13*, Article 781715. https://doi.org/10.3389/fpsyg.2022.781715

Kothari, C. (2019). *Research methodology, methods and techniques* (2nd ed.). New Age International Publishers.

Marinoni, G., Hilligje, V., & Jensen, T. (2020). The impact of COVID-19 on higher education around the world. *International Association of Universities*.

Matuga, J. (2009). Self-regulation, goal orientation, academic achievement of secondary students in online university courses. *Educational Technology and Society, 12*(3), 4–11.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

Mugenda, A., & Mugenda, O. (2003). *Research methods: Qualitative and quantitative approaches*. Acts Press.

Nduta, M. M. (2019). Relationship between selected determinants of career aspiration and academic performance of students in public secondary schools in Nairobi County, Kenya [Doctoral dissertation, Kenyatta University].

Ndwiga, M. M., Ongeti, K., & Syomwene, A. (2024). The role of students' characteristics on use of blended learning approach in selected public universities in Kenya. *Journal of Research in Education and Technology, 2*(2), 20–38.

Orodho, A. J. (2009). *Techniques of writing research proposals and reports in education and social sciences*. Mazola Publishers.

Petrus, L., Degeng, I., & Setyosari, P. (2016). Relationship between achievement motivation and learning outcomes on land law course students Nusa Cendana University. In *Proceedings of the International Conference on Education 2016* (pp. 699–705).

Verma, R., Verma, S., & Abhishek, K. (2024). *Research methodology*. Booksclinic Publishing.

Wakanyi, K. P. (2023). Emotional self-regulation and risk-taking behaviour as predictors of academic achievement among Form Two students in Nairobi City County, Kenya [Doctoral dissertation, Kenyatta University].

Wei, H. C., & Chou, C. (2020). Online performance and satisfaction: Do perceptions and readiness matter? *Distance Education, 41*(1), 48–69.

Weyage, A. (2023). Entry behaviour, learner motivation, self-regulation and academic performance of first year information communication technology (ICT) students: Evidence from Kibi Technical Institute [Doctoral dissertation, University of Cape Coast].