# Information Communication Technologyacademic and Performance of Secondary Schools in Kajiado County, Kenya

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**Abstract**: Development of information communication technologies has greatly affected educational in secondary schools.  It  is regarded has catalyst that provides tools, which teachers use to improve teaching and giving learners access to electronic media that make concepts clearer and more accessible. Secondary schools have started integrating information communication technology in their teaching and learning in order to improve the Kenya Certificate Secondary Examination    performance. The practice of using technology in teaching and learning is still limited in most of the schools. This study wasundertaken to determine the influence of information communication technology academic on performance of schools in Kajiado County, Kenya. It was focusing on information communication technology academic and resources support requirements in strengthening performance in secondary schools in Kajiado Country. The objective of this study was to; find out e-leaning and other materials on performance of secondary schools in Kajiado County, Kenya. The study adopted descriptive survey design. Stratified random sampling technique with proportional sampling fraction from selected schools wereused. Approximately 117 secondary schools was sampled across the county. The study specifically targeted principals, BOM members and teachers from both private and public secondary schools. The Statistical Package for Social Scientists was employed in analysing the data. The study found out that e-resources  and teaching materials have a significant effect on academic performance in Secondary school in Kajiado County. The study concludes that information communication technology is a catalyst by providing tools that teachers use to improve teaching and giving learners access to electronic media.Further, that teaching should change from the teachers' centredinstructions to creating more student-centredinteractive learning process. This will lead to understanding and engaging students more in their studies and create the ability to use modern technology. The study recommends that stakeholders make use of a multidimensional model, which has the ability to increase productivity and operability, create conditions for a cooperative dialogue, develop participatory research activities of knowledge, observation and discoveries, and customizes the information communication technology in a complex and holistic vision of the e leaning process. Developers to consider the teachers' characteristics and their needs when developing information communication technology platform so that they become relevant. The Government should ensure that secondary schools are equipped with facilities to cater for students needs since they are important in enhancing the performance in examination. Finally, there is need to conduct a survey that will include all the private and public secondary schools in all over in Kenya to establish the overall influence of information communication technology on performance in secondary schools.

**Key words:** Information Communication Technology & Academic Performance
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## I.    INTRODUCTION
        Globally there is an increase demand on the educational institutions to use information communication technology (ICT)in academic. Technologies has connected the whole world on examination performance and ICT academic has produced a good result in teaching and learning. UNESCO (2017) agrees that ICT as a tool of education can complement, enrich and transform education for the better. ICT academic can provide access to all kinds of global e-resources and can facilitate secure collaboration in the world education. Different materials from all over the world will  be shared with teachers and students for teaching and learning, stakeholders can discuss their ideas about innovative classroom practices, and their research works related to this (Parvin, 2013). The impacts of ICT into everyday classroom practices is essential. A significant amount of study has shown that the use of ICT in education can increase students' motivation and deepen understanding, promote active, collaborative and lifelong learning, offer shared working resources and better access to information, and help them to think and communicate creativelyaccording (Jonassen, 2000; Webb, 2005). Technologies appears to be

transforming nature of teaching and with new technology, the teaching can change from the teachers centred instruction to creating more student to interactive learning process and brings creativity, distribution, and handling of knowledge properly which make an impact students' performance (Goswami, 2014).

Kaplan and Norton, (2008), claim that operational effectiveness and strategy are both essential to superior performance and that strategy execution is crucial for quality and better students' academic result as ICT academic can be a catalyst by providing tools which teachers use to improve teaching and learning by giving learners access to electronic resources that make concepts clearer. Moreover,Brannigan (2010) concurs and affirms that there has been a global explosion in the use of computers in schools in the recent times, as an instructional, communicative and informational resource tools by use of databases, spreadsheets, multimedia, email, and network search engines.

ICT academic is considered as a means to promote new methods of instruction in teaching and learning. Technology has been identified as an innovative and exciting tool of instruction that shifts the paradigm to student-centric learning that supports learners to understand topics better (Watson & Watson, 2011). Nationally, the Kenyan Government has been working towards the realization transforming all educational institutions in the country to be ICT compliant as attested by the interest shown on ICT in a number of government policy documents (Republic of Kenya, 2005). According to Krishnaveni & Meenakumari (2010), agreed that ICT academic is being used in schools to communicate, create, organize, disseminate, store, retrieve, and manage information that has made it possible for educational holders to improve performance in KCSE. By new technology has a fundamental change in educational KCSE performance. ICT could be the missing tool in improving KCSE performance of secondary schools to cope with rapidly changes meant to effectively realize examination skill tasks combined with flexibility in learning and administrative activities essential in enhancing efficiency in educational institutions (Ismail, Ahmad & Affandy, 2013). The secondary schools in Kenya today emphasis is on students' performance in Kenya Certificate of secondary education. Teachers must understand the context within which students' performance improvement takes place (Wango, 2009).

There are challenges facing most schools with regard to academic technologies in KCSE performance in Kajiado County. This has resulted to a slow rate of general school operations despite its promise and potential for use in educational management in schools (Kirsch, 2014). Based on the importance of ICT in the background it formed the basis to examine the impact of ICT on academic performance in secondary schools in Kajiado County, Kenya

## 1. Problem Statement

Teachers across secondary schools in Kajiado County, Kenya, have been integrating ICT in teaching and learning, but students' academic performance in KCSE examinations has not been impressive as shown by the outcome of the examination results by Kenya National Examinations Council (KNEC). This could be due to poor introduction of ICT in learning and teaching in secondary schools in order to improve the KCSE in most of these schools. Few studies have been done on ICT academic in leaning and teaching in secondary and especially on how they affect performance of secondary schools at both national and county level in Kenya. It is against this backdrop that the researcher suggests a study on the ICTon academic performance of secondary schools in Kajiado County,

## 2. Objective

The aim of the study was to examine the impact of ICT on academic performance in secondary schools in Kajiado County, Kenya

### 4.Hypothesis

$H_{01:}$There is no relationship between e-Learning and teaching materials and academic performance of secondary schools in Kajiado County.

$H_{02:}$There is no relationship between regulatory framework and academic performance of secondary schools in Kajiado County

## 5. Literature review

The study evaluates a theoretical framework, which eventually provides a basis in formulating a conceptual framework that will guide the research.
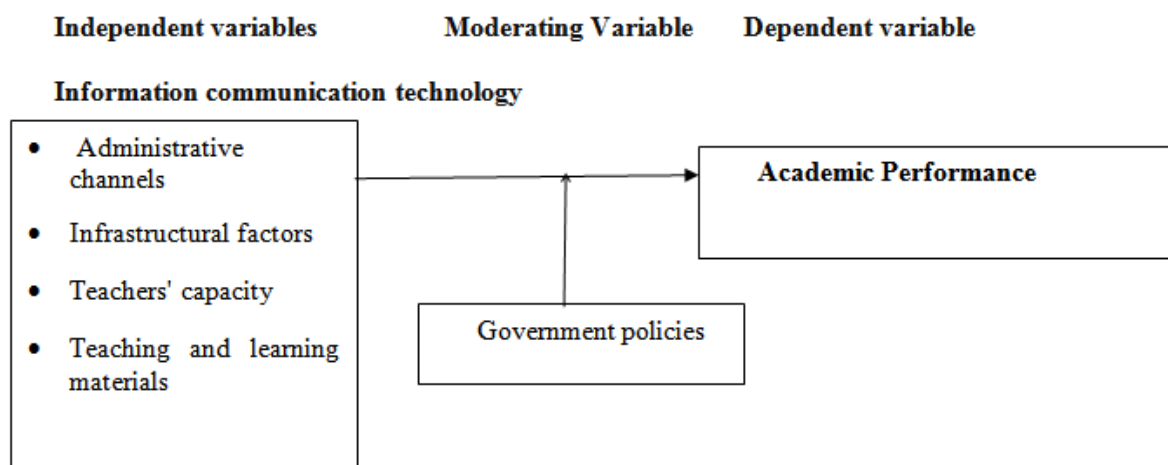
## 6.Academic in Schools

Students who ICT academic in learning may easily understand complicated topics and concepts. They are more likely to recall information and use it to solve problems in the classroom (Apple Computer, 2002).

Teaching is imparting knowledge, attitudes and values (Lefrancise, In Kenya, examination results are used as summative evaluation to measure students' performance. These are good examples, which show that

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ICT is becoming a vital enabling material that can no longer be left on performance secondary schools in Kajiado County

## 7. Conceptual Framework

This section examined how interactivity in independent variables of ICT academic in on performance of secondary schools in Kajiado County. These factors affect the use onICT academic on performance secondary schools in Kajiado County academic performance. It was established that the impact of ICT academic on performance and effect actually exists in Kajiado County.

**Independent variables**        **Moderating Variable**     **Dependent variable**

**Information communication technology**

- Administrative channels
- Infrastructural factors
- Teachers' capacity
- Teaching and learning materials

**Academic Performance**

Government policies

*Conceptual framework adopted from8.*

## 8. Research Methodology Design

The researcher used descriptivesurvey to yield qualitative and quantitative research approaches data required to answer research to answer research questions using questionnaire. Descriptive survey was taken however, the problem is structured and understood (Robson, 2002) Representative samples that reflect all the major characteristic of the population under investigation were taken from the study population. To address the research questions and objectives, the researcher adopts a mixed methods model. The research conducts a questionnaire survey to get response from respondents and was conducted in order to get deeper insight of ICT academic of performance of secondary schools in Kajiado County feeling same thoughts about the same topic. The study applied this design to investigate the current situation on the ICTacademic performance of secondary schools in Kajiado County. It enables the research to gather a wider range of information required following the objective of the study. According to Kothari (2009), descriptive survey describes the status of a phenomenon, determining the nature of the prevailing conditions, practices attitudes and seeking accurate descriptions

## 9. Target Population

The study was targeted Principals, Teachers and Board of Management (BOM) in secondary schools in Kajiado County. According to the Ministry of Education (2017), it has 117 secondary schools, both public & private, the study specifically targeted principals, BOM members and one teacher both in private and public secondary schools as categorized in the same strata. This makes a total population of 280 respondents. The distribution of secondary schools is as shown in table 3.1

**Table 3.1: Target Population**

| Secondary School category | Number | Percentage (%) |
|---|---|---|
| Public schools | 72 | 61.5 |
| Private schools | 45 | 38.5 |
| | 117 | 100 |

**Source**: *Ministry of Education (2017)*

## 10.Sample Size and Sampling Technique

According to Kerlinger (1993),Sample Size of 10-30% of total population forms a representative sample and according to Mugena and Mugenda (2003), 50% of the population is adequate and the researcher should take a big a sample as possible if he/she selected another sample of the same size. Orodbo, (2005) on the other hand states that sampling is a technique where the investigator seeks knowledge of a whole population, objective by observing a sample and extending the finding to the whole population through generation. The

study targets BOM, teachers and principals in the secondary schools. In this study, however purposive selected target population was method was applied. This leads to 280 sampled respondents.

## 11. Sampling Technique

Stratified and purposeful sampling techniques was used in getting the respondents. The secondary schools were classified purposively into five   areas to avoid selection biasness that include North, East, South, West and Central parts of Kajiado County. Utilizing a stratified sampling method was to ensure efficientstatistical estimates. Therefore, the study used stratified random sampling technique to obtain a required sample size from the population.

**Table 3.2** Targeted sample Size of public and private secondary schools

| Secondary School/ Number | | BOM | Head teachers | Total | |
|---|---|---|---|---|---|
| Public schools | 7272 | 72 | 72 | 216 | |
| Private schools | 45 | 45 | 45 | 45 | 135 |
| | 117 | 117 | 117 | 117 | 351 |

Because of time, the researcher was not able to go to all schools due to distance and thereforethe researcher used 50%, as this is ideal to conduct the study (Mugenda and Mugenda 2003). The researcher excluded two schools that was usedfor pre-test that is why it were adjusted from 58 schools to56 schools sampled. Moreover, to select the respondents per a school the researcher adopted stratified and purposive to select one BOM, one head teacher, and three teachers per school.

**Table 3.3** Sample size of respondents from both public and private secondary schools

| Secondary School/ Number | | 50% | Respondents | Total |
|---|---|---|---|---|
| Public schools | 72 | 34 | 5 | 170 |
| Private schools | 45 | 22 | 5 | 110 |
| | 117 | 56 | 100 | 2801 |

## 12. Data Collection Instruments

This study used structured questionnaires to collect data from the field. Primary data wereobtained from the field. The questionnaires were considered better instrument since it could enable the researcher to collect more data or information from the respondent. Questionnaire were administered to purposive selected head teachers, teachers and BOM members who were participating in the study. The questionnaire contained both open ended and closed ended questions. The closed ended questions provided an easy way of coding, while the open-ended ones enabled the researcher to gather wide and free opinions from the participants

## 13. Piloting

The questionnaire were  administered to thirty respondents in at least five secondary schools in neighbouring KijiadoCounty that were not included in the actual study population (Mugenda & Mugenda). The pilot study therefore enabled the researcher to asses' clarity of the instrument items so that those items found to be inadequate or vague was modified to improve the quality of study instrument thus increasing its reliability and validity. Piloting helps to identify ambiguous and irrelevant items (Wiesma (1995).  This secondary schools were chosen for study because they have relatively similar characteristics in Kajiado county. These results obtained in the pilot therefore adequately indicated the instrument reliability.

## 14. Validity of the Research Instruments

Validity is defined as the accuracy and meaningfulness of inferences, which is based on the research results (mugenda &Mugenda, 2003) to achieve validity of research instruments, the considerations of Kothari (2004) was considered. First, it ensured that the research instruments are adequate in scope and coverage, by including all the issues has investigated. The researcher was to make sure that questions covered all the aspects that are in the conceptual framework. In fact, content validity were used to assess whether the content of the questionnaire measures what it is supposed to be measure. The instruments was presented to experts in the area of study. The experts helped to improve the instruments. The experts' feedback, in form of recommendations to the researcher, were incorporated in the final instruments. Secondly, a pilot test of about ten percent of sampled schools were conducted in non-participating schools to enhance validity of the instrument

## 15 Reliability of the Research Instrument

Reliability is defined as a measure of the degree to which a research instrument yields consistent results on data after repeated trials (Kothari, 2003 Mugenda and mugenda, Orodho and Kombo, 2002). To ensure reliability, the study was   used a test-retest method to estimate the degree to which the same results could be obtained with a repeated measure of accuracy.  These were done to determine the reliability of the instruments.

The questionnaire was administered to thirty respondents in at least five secondary schools in Kajiado County. These teachers were not included in the main study. The filled questionnaires were done manually and after three weeks, the same were administered to the same group of subjects. The responses scored manually and a comparison between the data obtained in the first and second test was made to ascertain if the scores obtained by each respondent is quite close, which was an indication of high reliability and if the results were not close, then the researcher was to readjust the instrument and to achieve the desired reliability.

## 15. Data Analysis

Data from the field was tabulated coded and entered in the computer. It was analysed using Statistical Package for Social Sciences. The data were analysed using both quantitative and qualitative techniques. Quantitative technique was involving computation of descriptive statistics such as percentages and frequencies. In addition, quantitative technique involved generation of inferential statistics were enabled the researcher to establish the relationships of the variables in the study.

Specifically, regression analysis was used to show the influence of the independent variables and the dependent variable. The processed data were presented in tables and explanations given. Pearson's Chi square one tailed test was used in establishing the influence of leadership, infrastructural and teachers' factors on the integration of ICT in schools. The decision rule was that, the test result showing $p<0.05$ at 95% confidence level means that there is a significant influence. Where the test results were higher than the set alpha ($\alpha$) of 0.05 (i.e. $p>0.05$), then it meant that there is no statistical influence between the variables. The research findings were presented using frequency tables, percentages, line, and among others.

## 16. Response Rate

As shown in Table 4.1, the questionnaires that the researcher administered were 280 out of which only 238 fully filled questionnaires and returned.

**Table 4.1:** Response Rate

| Response | Frequency | Response Rate |
|----------|-----------|---------------|
| Returned | 238 | 85% |
| Not Returned | 42 | 15% |
| **Total** | **280** | **100.00** |

From the returned questionnaires, it gave a response rate of 85% which was within what Sekaran (2003) prescribed as a significant response rate for statistical analysis and established it at a minimum value of 50%.

## 17. Demographic Characteristics

Both frequency and percentage were one of the statistical measures used in analysis to describe the sample in terms of their demographic characteristics such as age, educational qualifications, and level of experience, and duration in current station. Although this was not core to the study purpose, it aided the study to contextualize the findings and formulate appropriate recommendations to enhance understanding of ICT academic and performance of secondary schools in Kajiado County, Kenya

## 18. Distribution of respondents by Age

The age of the respondents is of essence when it comes to ICT academic and performance of schools. The findings are indicated in Table 4.2.

**Table 4.2:** Distribution of Respondents by Age Bracket

| Age bracket | Frequency | Percentage |
|-------------|-----------|------------|
| **18-34 years** | 66 | 27.73 |
| **35-39 years** | 78 | 32.77 |
| **40-44 years** | 45 | 18.91 |
| **45-50 years** | 47 | 19.75 |
| **50 years and above** | 2 | 0.84 |
| **Total** | **238** | **100** |

Table 4.2 indicates that 32.8 percent of the studied respondents were who were the majority wereof age bracket 35-39 years, followed by those who were aged between 18 and 34 years who were approximately 27.7 percent. The 45-50 years' age category had 19.8 percent whereas 18.9 percent was those respondents who were aged 40-44 years. It is also to be noted that the percentage of the respondentsabove the age of 50 years was only 0.84 percent which was less than one percent. This observation showed that majority of the respondentswere

mature adults that couldfacilitate academic of ICT and performance.Similarly, olderparticipants are deemed more experienced than young or new entrants are in the school administration (Chege and Bula, 2015).

## 19. Distribution of Participants by Level of Education

The education level attained by the sampled respondents is important in that it plays a vital role in the academicof ICT onschool performance. The results are indicated in Table 4.3.

**Table 4.3:** Distribution of Respondents by Education Level

| Educational qualification | Frequency | Percent |
|---|---|---|
| No formal education | - | - |
| Primary education level | - | - |
| Secondary education level | 51 | 21.42 |
| Undergraduate level | 121 | 50.84 |
| Post graduate level | 76 | 31.93 |
| **Total** | **238** | **100** |

Results indicate that majority of the respondents had a basic education whereby approximately 21.4 percent had attained up to secondary education level, with 50.84 percent had undergraduate level of education. Only 31.93 percent had postgraduate education level that included college and thus they had a mix of skills from their college education also. Further, there was no respondent under who wasidentified as having no formal education and primary education and therefore could not read or write.

However, the study findings showed that majority of the respondentswere knowledgeable and with support could understand the academic of ICT on school performance.According to Murphy and Myors (2004), education level determines the ability of the respondents to comprehend the survey questions.

## 20. Length in Profession

The study sought to determine the duration the respondents have been in the profession.This information was necessary as itwas meant help to ascertain the extent their responses would be relied upon for valid conclusions based on experience. Results are shown in Table 4.4

**Table 4.4** Length of Profession

| WorkingDuring | Frequency | percentage |
|---|---|---|
| Less than 3 years | 58 | 24.37 |
| 3-6 years | 84 | 35.29 |
| 7-10 years | 33 | 13.87 |
| Above 10 years | 63 | 26.47 |
| **Total** | **238** | **100.0** |

From the findings, most of the respondents that is 35.3 percent had been in the secondary school institutions for a period of 3-6 years whereas approximately 26.5 percenthave been in these secondary schools for a period of above ten years. About 24.4 percent and 13.9 percent were less than three years old and 7-10 years respectively. This shows that almost 60 percent of respondents have been in the profession in less than a span of 6 years. From frequency distribution results, most of the sampled respondents had an extensive experience in secondary schools and therefore well versed with how the academic of ICT s the performance.

## 21. Duration of stay in the duty-station

The study sought to understand the duration of stay of the respondents in their duty-stations. The duration was divided into three categories including; 1-5years, 6-10 years, and over 15 years of stay in the duty station. The outcome was presented in Table 4.5

**Table 4.5: Distribution of the duration of stay in the duty-station**

| Duration | Frequency | Percentage |
|---|---|---|
| 1-5 years | 150 | 63.03 |
| 6-10 years | 11 | 4.62 |
| Over 15 years | 77 | 32.35 |
| **Total** | **238** | **100** |

From the findings, the study found that approximately 63 percent of respondents had stayed in their duty-stations for a period of 1-5 years, while 32.4percent of the respondents had stayed for 6-10 years. The rest that is 4.6 percent had stayed for over 15years. The finding indicates that most of the respondents had stayed at

the duty-stations for less than 5 years, implying that their knowledge of the relationship of ICT to the performance was for the period of less than 5 years from the time this study was undertaken. The duration they have stayed in the institution is enough to give reliable information on the of ICT academic on academic performance.

## 22.Reliability Analysis
Reliability analysis were subsequently done using Cronbach's Alpha, which measures the internal consistency by establishing if certain items within a scale measure the same construct. The findings were as shown in Table 4.6.

**Table 4.6:** Scale Reliability Coefficients

| Constructs | Alpha value (%) | No of items | Comments |
|---|---|---|---|
| Academic Performance | 86.82 | 8 | Reliable |
| Administrative Channels | 80.6 | 8 | Reliable |
| Infrastructure on | 73.8 | 8 | Reliable |
| Teacher's ICT Capacity | 88.01 | 8 | Reliable |
| Teaching and teaching material | 77.5 | 8 | Reliable |
| Regulatory Framework | 89.33 | 8 | Reliable |

From the results in Table 4.6, all the variables were reliable since their Cronbach Alpha value were greater than 0.7 in which the regulatory frameworkhad the highest Cronbach Alpha value of 0.8833 and Infrastructure onhad the lowest Cronbach Alpha value of 0.738. As per Malhotra (2015), if all the variables are reliable then the research instrument is reliable and therefore no **23.Validity Analysis**

In order to establish the validity of study instruments, tests of sampling adequacy was used. This enabled the study identify whether the items of the latent variables were appropriate for further analysis. Table 4.7 shows Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Bartlett's test of sphericity.The findings are as shown in table 4.7.

**Table 4.7:** Sampling Adequacy and Bartlett's Test of Sphericity

| Factors | KMO Test | Bartlett's Test of Sphericity | | | | Determinant |
|---|---|---|---|---|---|---|
| | | Approx. Chi-Square | | df | Sig. | |
| Secondary School Performance | 0.8862 | 874.631 | | 28 | 0.000 | 0.024 |
| Administrative channels | 0.8559 | 679.040 | | 28 | 0.000 | 0.055 |
| Infrastructure on | 0.7896 | 416.633 | | 28 | 0.000 | 0.168 |
| Teacher's ICT Capacity | 0.8425 | 1106.496 | | 28 | 0.000 | 0.009 |
| Teaching and Teaching materials | 0.6999 | 1112.54 | | 28 | 0.001 | 0.101 |
| Regulatory Framework | 0.7911 | 1012.45 | | 28 | 0.031 | 0.055 |

The findings in table 4.7, indicate that the scales had values above the threshold of 0.5 as determined by Williams, *et al.,* (2012) where; Secondary School Performance (0.8862), Administrative Channels (0.8559), Infrastructure on(0.7896), Teacher's ICT Capacity (0.8425), Teaching and e-learning Resource (0.6999) and Regulatory Framework (0.7911) . According to Williams, *et al.,* (2012) 0.50 is acceptable degree in KMO for sampling adequacy with values above 0.5 being better. Analysing whether samples are from populations had equal variances, Bartlett's Test of Sphericity provided p-values less than 0.05 hence showing a degree of sampling adequacy that was acceptable.

## 24. Teaching and Learning Materialson Academic Performance
The study sought to establish how the teaching and learning material attribute to academic performance. The responses were rated on a Likert scale and the results are as presented in table 4.11. The study results on Schools that had ICT integrated for teaching and learning, had about 29% of the respondents just agreeing with this statement whereas 23% strongly agreed with the same. Only 17% disagreed with that fact. The mean of 3.5 implies that most of the respondents just agreed with this statement. In addition, the standard deviation of 1.2 showed that there was some variation. In assessing the respondents concerning their view on whether ICT academic had d teaching and learning in schools, it was revealed that majority of them that is 22.7% and 27.3% just agreed and strongly agreed respectively with this statement leading to a mean of 3.26 and a standard deviation of 1.4. This implies that there was little variation in responses although it was clear that this statement was strongly supported.

On the other hand, about 44% and 22%, of the respondents just agreed and strongly agreed with the fact that schools had specific computers for teaching and learning. Only 25% disagreed with that statement. This made the mean for the statement to be 3.6 with a standard deviation 1.2 indicating some variation in responses. Similarly, the majority of the respondents, 40%, supported the fact that ICT academic had specific subject's software. The mean and the standard deviation for this statement was 3.2 while the standard deviation was 1.2. The study also established that the most (that is 63%) of the respondents concurred that ICT academic had improved teaching and learning methods. Their mean was also 3.4 while the standard deviation was 1.2 indicating variation in responses.

On the other hand, the study established that the majority, 83% of the respondents concurred that ICT academic had improved teachers' skills in policy and curriculum interpretation and practices. Their mean was 4.23 while the standard deviation was 1.1indicating variation in responses. About 26% and 23%, of the respondents just agreed and strongly agreed respectively with the fact that ICT academic had d classroom interactions. Only 11.8% disagreed with that statement. This made the mean for the statement to be 3.5 with a standard deviation 1.1 indicating some variation in responses.

Lastly, the majority of the respondents, 49.2%, supported the fact that schools used e-learning books in the library. The mean and the standard deviation for this statement was 3.8 while the standard deviation was 1.09. The overall mean for the structural variable was 3.6, indicating that majority of the respondents just agreed with the statements. The standard deviation was 1.2, indicating that there was some variation in all of the responses.

**Table 4.11:** Teaching and Learning Materials on Academic Performance

| statement | Percentage (%) | | | | | Mean | STD |
|---|---|---|---|---|---|---|---|
| | SD | D | N | A | SA | | |
| Teachers are using ICT academic materials on lesson preparation. | 7.98 | 9.24 | 31.09 | 28.57 | 23.11 | 3.496 | 1.176 |
| Schools has ICT academic on teaching and learning | 8.82 | 34.03 | 7.14 | 22.69 | 27.31 | 3.256 | 1.398 |
| Has school incorporate simulation software | 7.56 | 17.65 | 7.98 | 44.54 | 22.27 | 3.563 | 1.227 |
| Our teacher uses the internet materials for teaching and learning | 9.66 | 20.59 | 29.83 | 22.69 | 17.23 | 3.172 | 1.219 |
| School has ICT academic on learning and teaching materials in school | 7.14 | 21.85 | 8.4 | 46.22 | 16.39 | 3.429 | 1.202 |
| Has school has specific facilities for teaching and learning in school | 5.04 | 2.1 | 10.08 | 30.25 | 52.52 | 4.231 | 1.056 |
| Has school has ICT academic on specific subject's software | 6.3 | 5.46 | 39.08 | 26.05 | 23.11 | 3.542 | 1.097 |
| ICT academic has improved on teaching and learning in school | 5.04 | 8.4 | 14.71 | 43.7 | 28.15 | 3.815 | 1.091 |
| **Overall Mean** | | | | | | **3.463** | **1.173** |

The study sought to explore academic performance of secondary schools. The responses were rated on a Likert scale and the results are as presented in table 4.13. The study results on whether the university absorption rates of students was large after examinationhad about 29% of the respondents just agreeing with this statement whereas 23% strongly agreed with the same. Only 17% disagreed with that fact. The mean of 3.5 implies that most of the respondents just agreed with this statement. In addition, the standard deviation of 1.2 showed that there was some variation. In assessing the respondents concerning their view on whether the Schools had high enrolment rates, it was revealed that majority of them (that is 22.7% and 27.3%)just agreed and strongly agreed respectively with this statement leading to a mean of 3.26 and a standard deviation of 1.4. This implies that there was little variation in responses although it was clear that this statement was strongly supported.

On the other hand, about 44% and 22%, of the respondents just agreed and strongly agreed with the fact that KCSE results for the previous year were impressive. Only 25% disagreed with that statement. This made the mean for the statement to be 3.6 with a standard deviation 1.2 indicating some variation in responses. Similarly, the majority of the respondents, 40%, supported the fact that studying resources were available and easily accessible. The mean and the standard deviation for this statement was 3.2 while the standard deviation was 1.2. The study also established that the most (that is 63%) of the respondents concurred that their schools

were effective in syllabus coverage. Their mean was also 3.4 while the standard deviation was 1.2 indicating variation in responses.

On the other hand, the study established that the majority, 83% of the respondents concurred that their school had been awarded with the current ISO certification.Their mean was 4.23 while the standard deviation was 1.1indicating variation in responses. About 26% and 23%, of the respondents just agreed and strongly agreed respectively with the fact that the parents and students were satisfied with academic performance of the school. Only 11.8% disagreed with that statement. This made the mean for the statement to be 3.5 with a standard deviation 1.1 indicating some variation in responses.

Lastly, the majority of the respondents, 49.2%, supported the fact that their school in the last two years was ranked the top in pass rates. The mean and the standard deviation for this statement was 3.8 while the standard deviation was 1.09. The overall mean for the structural variable was 3.6, indicating that majority of the respondents just agreed with the statements. The standard deviation was 1.2, indicating that there was some variation in all of the responses.

**Table 4.13:** Academic Performance

| Macro Environment | Percentage (%) | | | | | Mean | STD |
| | SD | D | N | A | SA | | |
|---|---|---|---|---|---|---|---|
| The university absorption rate of students is large after KSCE | 7.98 | 9.24 | 31.09 | 28.57 | 23.11 | 3.496 | 1.176 |
| My School high enrolment rates | 8.82 | 34.03 | 7.14 | 22.69 | 27.31 | 3.256 | 1.398 |
| The KCSE results for the previous year was impressive | 7.56 | 17.65 | 7.98 | 44.54 | 22.27 | 3.563 | 1.227 |
| Resources are available and easily accessible | 9.66 | 20.59 | 29.83 | 22.69 | 17.23 | 3.172 | 1.219 |
| My school is effective in syllabus coverage | 7.14 | 21.85 | 8.4 | 46.22 | 16.39 | 3.429 | 1.202 |
| Parents and students are satisfied with academic performance of the school | 6.3 | 5.46 | 39.08 | 26.05 | 23.11 | 3.542 | 1.097 |
| My school in the last two years was ranked the top in pass rates | 5.04 | 8.4 | 14.71 | 43.7 | 28.15 | 3.815 | 1.091 |
| **Overall Mean** | | | | | | **3.563** | **1.183** |

## 25. Findings

ICT academic can be a catalyst by providing tools that teachers use to improve teaching and giving learners access to electronic media that make concepts clearer and more accessible.With start of new technology, the teaching could change from the teachers' cantered instruction to creating more student-cantered interactive learning process. ICT academic helps on more understanding workforce by engaging students more in their studies and create the ability to use modern technology that is more efficient than early versions. Innovation in the classroom through ICT academic brings creativity, distribution, and handling of knowledge properly that make an impact students' performance.

Few students qualify to join the various universities and colleges in Kenya and other countries. This could be due to poor academic of ICT in learning and teaching to improve the KCSE in most of these schools. Teachers across secondary schools in Kajiado County, Kenya, have to some extent embraced ICT academic in teaching and learning, but students' academic performance in KCSE examinations has not been impressive as shown by the outcome of the examination results by Kenya National Examinations Council (KNEC). Few researches has been done to evaluate ICT on academic performance

## 26. Teaching and Learning Material and Academic Performance

This objective aimed at finding out on theTeaching and Learning Material on academic performance of secondary schools in Kajiado County.

The overall mean for the structural variable was 3.6, indicating that majority of the respondents just agreed with the statements. The standard deviation was 1.2, indicating that there was some variation in all of the responses.

There was a negative relationship between the teacher and learning material and academic performance was moderate (r=-0.4846).

These findingsrevealed that unit increase in learning material led to a non-significant corresponding reduction in academic performance by 0.0508 holding other factors constant.

**5.3 Conclusions**

ICT academic can be a catalyst by providing tools that teachers use to improve teaching and giving learners access to electronic media that make concepts clearer and more accessible. With start of new technology, the teaching could change from the teachers' cantered instructions to creating more student-cantered interactive learning process. ICT academic helps on more understanding workforce by engaging students more in their studies and create the ability to use modern technology that is more efficient with versions. Innovation in the classroom through ICT academic brings creativity, distribution, and handling of knowledge properly, which make an impact students' performance.

Few students qualify to join the various universities and colleges in Kenya and other countries. This could be due to poor academic of ICT in learning and teaching to improve the KCSE in most of these schools. Teachers across secondary schools in Kajiado County, Kenya, have to some extent embraced ICT academic in teaching and learning, but students' academic performance in KCSE examinations has not been impressive as shown by the outcome of the examination results by Kenya National Examinations than Council (KNEC). Few researches have been done to evaluate the of ICT academic on academic performance

**5.4 Recommendations**

The research confirmed that there were interactivity challenges and adaptability issue facing the ICT on academic performance of secondary schools in Kajiado County.This study suggeststhat the development of better model that will be able to cater the needs of ICT on academic performance of secondary schools in Kajiado country that will be to cater for the needs of the users in a more sufficient manner. The following are the recommendations suggested.

i. The researcher proposes the use of a multidimensional model, which has the ability to increase productivity and operability, create conditions for a cooperative dialogue, develop participatory research activities of knowledge, observation and discoveries, and customizes the ICT academic in a complex and holistic vision of the e leaning process

ii. The software developers should consider the teachers' characteristics and their needs when developing ITC academic platform so that they become relevant. The teachers differ in many respects thus differs the ways in in which they teach.

iii. The policy makers are beadvised to come up with similar models that will be able to address most the issues that are currently affecting the smooth running of ICT academic.

iv. The government should ensure that secondary schools are equipped with facilities to cater forstudents' needs since they are important in enhancing the performance in KCE

v. It will be important for the government to look at these challenges with an aim of addressing them in order to make them more efficient and effective.

**5.5 Further area of study**

vi. It also advisable that the proposed ofICT Academic on performance of secondary schools may be used when the developing ICT academic be tested and implemented.

vii. There is need to conduct a survey that will include all the private and public secondary schools in all over in Kenya to establish the overall ICT academic on performance in secondary schools

viii. It will be important for the government to carry out comparative studies on ICT academic with other institutions across the world. This will be important for benchmarking purpose in order to get best practice in ICT academic to improve performance

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