

# **INTERACTIONS BETWEEN TEST DURATION AND CANDIDATES' PERFORMANCE IN ACADEMIC SELECTION APTITUDE TESTS AMONG STUDENTS IN UASIN GISHU COUNTY, KENYA**

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## **Abstract**

According to Kenya's Institute of Policy Analysis and Research (2008), there is poor management of national examinations. Cases of cheating in national examinations due to poor management of the processes—where leaked papers give some students and schools an unfair advantage over others—have become commonplace. Yet, placement to university is based on national exams. Developed countries use aptitude tests to make placement decisions. Such tests may be proposed for adoption in Kenya but only after establishing their relevance. The purpose of the study was to determine the possible relevance of such tests and in this particular study the researcher sought to find out whether the test duration had a significant effect on the candidate's performance in the Scholastic achievement test among Kenyan students. The null hypothesis  $H_0$ : Test duration has no significant effect on the candidate's performance in the Scholastic achievement test was tested. The study adopted the causal-comparative design. The target population comprised all the 2469 form four students in the twenty four (24) secondary schools in Eldoret town from which eight (8) schools were sampled using the stratified random sampling technique and a sample of 240 students was selected purposively from the eight (8) schools. The data was collected using a past Scholastic Achievement Test. The study data was analysed using ANOVA and it was conducted using SPSS 17 version 22 with the level of significance being  $\alpha = 0.05$ . The findings indicated that test duration has no significant effect on the examinee's performance in the Scholastic achievement test. The implication is that taking the SAT for longer or shorter than the prescribed time (225 minutes) does not significantly advantage or disadvantage the examinees by changing their performance in the SAT. Concerning the test taking duration, the study recommends that the examinees be allowed enough time as possible when

taking the aptitude test since time has no significant effect on the examinee's performance in the SAT.

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**Keywords:** Aptitude test, test duration

### **Introduction**

Admission to Kenyan Universities is based on the candidate's scores or grades obtained in the Kenya Certificate of Secondary Examination (KCSE). This means that an essential ingredient for making "functional decisions" has been lacking from the placement formula (Institute of Policy Analysis and Research, 2008). Cases of examinations related crimes, leakage of national examinations papers coupled with other "regular" examinations irregularities (for instance cheating in KCSE) implies that the use of KCSE examinations results as a decision making criterion in placing the students into various courses and universities may not be a tenable practice today.

According to Kenya's Institute of Policy Analysis and Research (2008), there is poor management of national examinations. Cases of cheating in national examinations due to poor management of the processes—where leaked papers give some students and schools an unfair advantage over others – have become commonplace. This has gone on for many years without the Kenya National Examinations Council (KNEC) sealing the loopholes. The scandal of 40,000 candidates who received the wrong results for the 2007 examinations has not been addressed. In 2008, some students became violent when they were prevented from seeking to obtain district "mock" examination papers in advance to enhance their grades. It has been alleged that the KNEC has been using "mock" examination results to moderate KCSE grades for students in some schools (IPAR, 2008).

In the case of admission to public universities, candidates are admitted close to 1 year after their KCSE examinations. This is not a tenable practice. According to Nitko (2004), a student's specific past examinations (close to 1 year before admission to university) is not very helpful in establishing expectations for learning new material whenever the student must face these conditions:

- 1) Learning to perform in ways that are quite different from those learned in the past,
- 2) The students past performance has been erratic, for example, due to examinations irregularities or circumstances before and during the KCSE examinations, such as the candidates' health,
- 3) Previous test scores or school grades are known to be unreliable or invalid, for example a s a result of a mix up of examination results such as that which happened in KNEC in 2007, or
- 4) The student's records of past performance are not available.

This implies that decisions to place students in universities on the basis of KCSE results for exams sat over a year before placement is very faulty. There is need to come up with a way of testing the candidates' abilities after KCSE and before admission to universities for different courses. Again, the same marks from KCSE may not be valid because memorization, cramming, cheating and/or other examinations irregularities are in abundance (IPAR Report, 2008). Memorization (which is inappropriate) therefore accounts for a large proportion of the scores students obtain in KCSE whose results are used by The Kenya Universities and Colleges Central Placement Services as the sole criterion for selecting students for university education.

The unreliability of the KCSE in educational decision making is evidenced by the number of students who fail to succeed in the various "superior" courses to which they were placed on the basis of their superior grades and /or marks at KCSE (IPAR, 2008). Again, students who did not perform well in the KCSE examinations due to health or socio-economic conditions are condemned to "inferior" courses or denied admission to universities. The KCSE therefore becomes a stumbling block to university education for such candidates. At the same time, the candidates admitted to universities to pursue various courses could have obtained good marks in K.C.S.E due to cheating, guessing or as a result of halo effect.

The psychometric tests, especially the Scholastic Achievement Test, have the potential of addressing more adequately the problems discussed in the foregoing (NACAC, 2008). However, until the psychometric tests have been understood through a detailed analysis, their value will continue to be unknown in Kenya. The study as part of determining the possible relevance of such tests sought to find out whether the test duration had a significant effect on the candidate's performance in the Scholastic achievement test among Kenyan students.

### **Purpose of the study**

The purpose of the study was to determine the possible relevance of such tests and in this particular study the researcher sought to find out whether the test duration had a significant effect on the candidate's performance in the Scholastic achievement test among Kenyan students.

### **Study hypothesis**

HO: Test duration has no significant effect on the candidate's performance in  
the Scholastic achievement test

### **The study design**

The study adopted the causal – comparative research design which is also known as the ex-post facto design. According to Kothari (2004) the design allowed the researcher to collect data about one or more variables from one study subject and compare that data. In this design, the independent variable(s) is or are not available for manipulation by the researcher.

### **Study population**

The study was conducted in secondary schools in Eldoret Municipality of Uasin Gishu County of Rift Valley, Kenya. The accessible population of the study was all the Form 4 students in the 24 secondary schools in Eldoret town, who numbered 2469. The form four students were considered based on the assumption was that they would be the ones expected to take aptitude tests such as the Scholastic Achievement Test when seeking admission to Universities abroad after their sitting their Kenya Certificate of Secondary Examinations (KCSE).

### **Sample and Sampling method**

According to Kothari (2004), sampling involves selecting some elements of a population, having similar features to the underlying population, as representative of the total population so as to make certain observations of elements and make conclusions regarding the entire population.

Mugenda and Mugenda (1999) argue that the main factor that researchers should consider in determining a study sample size is the homogeneity of the population from which the sample is drawn ( as well as sample homogeneity) together with the need to keep it manageable enough.

A total of eight (8) secondary schools in Eldoret town participated in the study, which included two (2) girls' schools, two (2) boy's school, four (4) co-educational. The use of different types of schools were adopted so as to provide a representative sample of the school population from Eldoret town. This number of schools represented 33.3 % of the population of schools in the municipality. The eight (8) schools were selected from the 24 schools using the stratified random sampling technique. The researcher used stratified random sampling at a second level in order to ensure that a school is selected from at least each of the three categories, that is: National, County and District schools. A sample of 240 form four students was selected from the eight (8) sampled schools for participation in the testing exercise using the Scholastic Achievement Test. Nitko (2004) recommends small samples for such detailed analyses of aptitude tests. The researcher selected 30 students from each sampled schools using purposive sampling. To avoid selecting students with the same level of academic ability, the researcher

selected the top fifteen (15) and bottom fifteen (15) in each school. The sample comprised 120 female and 120 male students.

### **Data collection Instrument**

The study data was collected using a sample Scholastic Achievement Test. The Scholastic Achievement Test is a standardized test that is published and is used for purposes of screening students for placement in Universities in USA. The SAT consists of three major sections: Critical Reading, Mathematics, and Writing. Each section receives a score on the scale of 200–800. All scores are multiples of 10. Total scores are calculated by adding up scores of the three sections. Each major section is divided into three parts. There are 10 sub-sections, including an additional 25-minute experimental or "equating" section that may be in any of the three major sections. The experimental section is used to normalize questions for future administrations of the SAT and does not count toward the final score. The test contains 3 hours and 45 minutes of actual timed sections, although most administrations, including orientation, distribution of materials, and completion of the biographical sections, run about 4 hours (10–25 minutes per sub-section) long.

### **Data collection Procedure**

The psychological test was administered to the sample in a strict environment to avoid cross-fertilization of ideas and responses. Research assistants from a research consultancy firm known as Millennium Research Consultants were used, together with teachers in the participating schools in order to avoid "stranger-effect." The assistants were trained on the instructions as well as the SAT administration guidelines. The researcher was present during the entire test period in all the schools. The students were given answer booklets which had serial numbers. They were required to write using biro pens. The Scholastic Achievement Test being an aptitude test was administered in the morning because it is taxing mentally. The research assistants, teachers and the researcher invigilated the test to prevent cheating. The scoring of the test was done according to the test publisher's specifications.

### **Data Analysis methods**

The study data was analyzed using regression analysis, presenting results for ANOVA. Descriptive methods were also applied. All analysis was conducted using SPSS 17 version 22. The level of significance adopted by the study was  $\alpha = 0.05$

### Study results

The effect of test duration on the candidates’ performance in the SAT

The SAT is developed such that examinees should take it in 3 hours and 45 minutes (225 minutes). The researcher wanted to find out if the examinees’ score in the SAT would change (increase or decrease) when students are allowed more time (longer than the prescribed time) or less time (less than the prescribed time) to take the test. On an experimental basis, three groups of 80 examinees were created randomly from the sample. Group one took the test in 225 minutes, group two took it in more than 225 Minutes (some took as long as 6 hours) while group three took it in Group Less than 225Min. The three groups’ SAT scores were analyzed to find out whether the time change had an effect. The following null hypothesis was tested:

HO: Test duration has no significant effect on the candidate’s performance in the Scholastic achievement test.

The distribution of means of SAT scores by the three time groups is shown on table 1

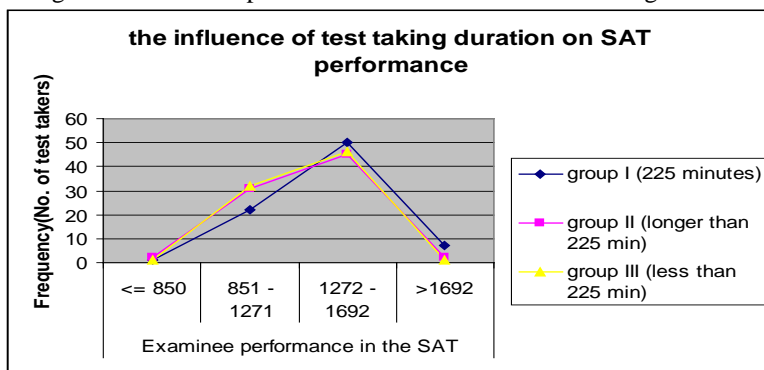
Table 1: The distribution of performance or scores in the SAT by test duration

Test taking duration	Performance in the SAT		
	n	Mean	SD
Group I (225Min)	80	1321.98	204.81
Group II (Longer than 225Min)	80	1322.02	230.32
Group III(Less than 225Min)	80	1265.71	227.31
Total	240	1320.40	225.14

The observation of the distribution on table 1 shows that group three examinees (who took the test in a shorter time than what is prescribed) had the lowest SAT mean score of 1265.71 while the difference between SAT mean scores for group one and two was significantly small (0.04).

This relationship between examinee’s the examinee test taking duration and performance in the SAT is graphically presented in figure 1 in order to show the trend.

Figure 1: Examinee performance in SAT versus test taking duration



The figure shows that the score differences between group one and group two is very marginal implying that allowing the examinees to take the SAT for longer than three hours and forty five minutes does not increase the examinee's chances of obtaining higher score in the SAT. The group that took the SAT in a period less than the time prescribed by the SAT developer had lower scores (with a mean of 1265.71).

To test whether or not the three mean scores were significantly different, the analysis of variance statistic was computed and the results presented in Table 2.

Table 2: One way analysis of variance for test duration and performance in the SAT

Source of variation	SS	df	MS	Fob	Fcrit
Between groups	395926.40	2	177963.10	2.96	3.0
Within groups	11718041	237	49443.21		
Total		12113968	239		

The results in table 2 indicate an F observed of 2.96 which was statistically significant at .05 level of significance. A critical value of F (3.0) was obtained from the statistical tables for the F distribution. Since  $F_{ob} = 2.96 < F_{crit} (2, 237, .05) = 3.0$ , **H<sub>0</sub>** was accepted implying that test duration has no significant effect on the examinee's performance in the Scholastic achievement test. The implication is that taking the SAT for longer or shorter than the prescribed time (225 minutes) does not significantly affect the performance in the SAT.

The effect of test duration on the candidates' performance in the SAT

The researcher sought to investigate the effect of changing the test duration on performance in the SAT. The findings indicated that test duration has no significant effect on the examinee's performance in the Scholastic achievement test. The implication is that taking the SAT for longer or shorter than the prescribed time (225 minutes) does not significantly affect by either advantaging or disadvantaging the examinees by changing their performance in the SAT.

Messick and Ann (1995) observed that it did not matter how long a candidate took the SAT. The examinee's score is constant regardless of how long one takes the SAT. This, they opine, is because of the nature of items in the test, how they are framed, and the nature of their response choices or options. This was confirmed by the high item quality revealed by this study in the determination of the difficulty and discrimination indices.

If the test is adopted by the Kenyan education system stakeholders, there will be need for test administrators to administer it for the prescribed

test taking duration of 3 hours and 45 minutes, if the items will not be changed radically in the Kenyan version of the scholastic achievement test.

### **Recommendation**

Concerning the test taking duration, the study recommends that the examinees be allowed enough time as possible when taking the aptitude test since time has no significant effect on the examinee's performance in the SAT.

### **References:**

- Allensworth, E., Macarena, C. & Steve, P. (2008). *From High School to the Future: ACT Preparation – Too Much, Too Late*. Chicago: University of Chicago Press.
- Institute of Policy Analysis and Research (2008). *Radical Reforms for Kenya's Education Sector: Implementing Policies Responsive to Vision 2030*. Nairobi: Government Printers.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Delhi: New Age International Publishers Ltd.
- Messick, S. & Ann, J. (1981). *Time and Method in Coaching for the SAT*. Princeton: Educational Testing Service.
- Mugenda, O.M. & Mugenda, A.G. (1999). *Research Methods: Qualitative and Quantitative Approaches*. Nairobi: Acts Press.
- National Association for College Admission Counseling. (1995). *Recommendations of the Commission on the Role of Standardized Testing in College Admission*. New York: Author.
- National Association for College Admission Counseling. (2008). *NACAC Commission on the Use of Standardized Tests: ACT's Response and Recommendations Regarding the Critical Issue Areas Identified by the Commission*. New York: Author.
- Nitko, A. J. (2004). *Educational Assessment of Students* (3<sup>rd</sup> ed.) New Jersey: Merrill Prentice-Hall.
- Slack, W. V. & Douglas, P. (1980). The Scholastic Aptitude Test: A Critical Appraisal. *Harvard Educational Review*, 50(2), 154-175.