



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
SCIENCE
SET 600: RESEARCH METHODOLOGY

DATE: Friday 20th April 2012

TIME: 8.00a.m – 10.00a.m

Instructions: Question **ONE** is compulsory

Answer Any Other **THREE** questions

Question one (30 marks)

a) Read the following passage and answer the questions that follow.

“The services sub-sector depends on clients for its success. The attitude of clients towards the companies can either help to increase or decrease the profit margin. Several meetings and workshops have been held within the sub-sector to improve on communication techniques.

However, despite various meetings, clients and workers have raised complaints in relation to poor communication. Complaints have been made in relation to poor language use among the workers and between the workers and clients. There have also been complaints due to unhealthy competition among workers and among the various departments. This has contributed to poor teamwork and hostility. It was pointed out that the various departments were not communicating effectively and these had contributed to low sales. Some of the seasoned customers had opted for other hiring firms (Safari quip, 2004). The company was losing a lot of sales. There were also delays and lack of cooperation among various departments.

Although training had been carried out by Safari quip to develop and help workers achieve appropriate interaction amongst themselves and among clients, factors contributing to poor communication and its effect on the industry have not been assessed. However, since communication had a lot of influence on sale of services within this industry, it was necessary to find out the factors affecting effective communication at Safari quip limited” (Adopted from Olembo, 2005)

Required

- i) Suggests a suitable topic for the statement of the research problem (2 marks)
 - ii) Construct appropriate research objectives for the above problem (4 marks)
 - iii) State the unit of analysis and the target population for this study (2 marks)
 - iv) Explain the appropriate sampling technique for this study. (4 marks)
 - v) Explain what instrument you would use in this study and why. (3 marks)
 - vi) How might you ensure that your instrument has:
 - 1) Construct validity (3 marks)
 - 2) Content validity (3 marks)
 - 3) Internal consistency (3 marks)
- b) Describe the classical experimental design for engineering research. (6 marks)

Question two (20 marks)

After reading a government report, about the increase in road accidents, the ministry of roads and public works what to understand why there is an increase in road accidents among teenage drivers. Assume you are the managing director of a research firm and you have been approached to conduct this research.

- i) Identify the type of research this is and why? (2 marks)
- ii) Indicate the significance of this study (3 marks)
- iii) Outline three assumptions you would make in this study (3 marks)
- iv) Explain three key approaches you would follow when doing the critical review of the literature for this study (6 marks)
- v) Explain whether you would use the theoretical framework or conceptual framework in this study and why. (6 marks)

Question Three (20 marks)

Read the following extract submitted by a graduate student and answer the questions that follow.

Title: The Effects of using Computer as a Tool in Teaching Selected Topics in High School Physics

This study investigated the relative effects of using computers as a tool in teaching selected topics in Physics. It also looked into the relationship between the attitude of students who used the computers as a tool and their achievement in the subject.

The following hypotheses were put forward:

- 1) Students exposed to computers as a tool in learning Physics scored higher in the posttest than the students in the control group.
- 2) Students who have favorable attitude toward using computers as tools in physics will a) *achieve higher in physics* and b) *have more favorable attitudes toward physics, than students with less favorable attitudes.*
- 3) These variables are positively correlated with one another: a) *attitude toward Physics*, b) *attitude toward use of computer*, and c) *achievement in Physics*.

How the experiment was done?

Sixty senior high school students from the two sections of a High School in University X were matched according to average grade and physics grade during the first grading. The teaching period lasted for two weeks.

Students in the Experimental Group were taught with six IBM microcomputer units which were used in presenting/introducing selected topics on Waves, Light, and Sound.

In the control group, the students were taught with other kinds of teaching aids such as slides and transparencies. The researcher taught both groups. An achievement test and an attitude inventory toward physics and computer use were administered as pretest and posttest to the students. The groups' scores on these instruments were then compared. The t-test and Pearson correlation technique were applied to the data.

The experimental group scored significantly higher than the control group in the pretest. However, no significant difference was found in the two groups' posttest scores on the achievement test, not even after applying analysis of covariance, using the pretest score as a covariate. Neither did the groups differ in their mean grade scores over the 2-week teaching period. The experimental group had a more positive attitude toward computers than the control group.

The control group showed a consistently higher score on attitude toward physics than the experimental group, but the difference was not significant.

The correlation between attitude toward physics and achievement as measured by the test was close to zero.

Required

- i) What is (are) the dependent, independent and extraneous variables?
(4 marks)
- ii) What variables were controlled?
(2 marks)
- iii) What strategy was used to control the effects of the initial non-comparability of the groups?
(4 marks)
- iv) Explain which design was used in the study.
(3 marks)
- v) What explanations might be put forward for the non-significant differences?
(4 marks)
- vi) Explain the test statistic(s) that was used in testing hypothesis 1).
(3 marks)

Question Four (20 marks)

a) A study was made of a sample of Research methodology students. The students in the study were all 1st semester graduate students and were distributed across 7 University departments. Students were randomly distributed to 3 groups. Over the first 5 weeks of a semester, group 1 was given easy problem assignments, group 2 received moderately difficult problem assignments, and group 3 received very difficult assignments. The groups were then compared on their self-ratings of the usefulness of statistics. No attempt was made to assess or control for student differences in math background. Some students received special statistics tutoring during the first 5 weeks of the semester unbeknownst to the researcher.

- i) Explain the experimental design for this study (2 marks)
- ii) Describe the scale of measurement used in the study (2 marks)
- iii) Discuss potential threats to internal validity posed by this study. (4 marks)
- iv) Describe one way to deal with the threats discussed in (a). (2 marks)
- v) Discuss potential threats to external validity posed by this study. (4 marks)
- vi) Describe one ways to deal with the threats discussed in (c). (2 marks)
- vii) Explain the appropriate statistical test(s) to analyze the data collected in the study (4 marks)

Question five (20 marks)

a) When developing a survey instrument a variety of guidelines should be adhered to. Explain each of the following and provide an example for each: appropriate question forms, avoiding double-barreled questions, item length, and biased items.

(10 marks)

a) Suppose that a researcher is doing a study of the effects of Apprentiship Training on form 4 students in Kiambu County. Ten schools volunteer and she gets agreements to have the Apprentiship teachers provide the training that she has prepared. A test of Apprentiship Knowledge is also developed and will be administered at the beginning and at the end of the Apprentiship training. She also knows that she should use a control group, but the Kiambu schools will not let her randomly select schools. So she selects control schools that are as similar to the 10 experimental schools as possible, using a set of 2 variables (County-test average for each school, and percentage of non-native English speaking students in each school). She will test all the form 4 students in those "control/comparable" schools at the same time that she tests the students from the experimental schools.

- i) What are the risks with this approach to finding a comparison group?
(3 marks)
- ii) What does she gain from getting a comparison group in this way, compared to not having a comparison group of students at all?
(3 marks)
- iii) Outline the advantages of the research design used in this study compared to using full random selection.
(4 marks)