**

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ABCU001RESEARCH METHODOLGY

1. Compare and contrast research hypothesis and research question.                                                                                               (2 Marks)

Research question and hypothesis are the foundations of a research study. Formulating the research question or developing the hypothesis can help you to decide on the approach of the research. A research question is the question the research study sets out to answer.

Hypothesis is the statement the research study sets out to prove or disprove. The main difference between hypothesis and research question is that **hypothesis is predictive in nature whereas research question is inquisitive in nature.**

1. For a researcher to get data, it has to be collected. Evaluate the various modern technology enabled data collection methods used in research today using examples.                                        (5 Marks)
2. Questionnaire: It is a printed list of questions where the answers are to be put. It is a set of pre-determined questions by the researcher and based on the objectives of the study. The study objectives must be clear to the researcher before the questionnaire is formulated.

A questionnaire can either be sent to the respondent by post hence postal questionnaire or delivered by hand and in both cases the details of the respondent must be available. The questionnaire should also indicate the contact details of the researcher for the respondent to be able to deliver it accordingly. It can also be sent electronically and returned electronically and in such a case, the researcher must print the final hard copy. At the end of compiling the final research report, a questionnaire should be attached as an appendix. A questionnaire as a tool for data collection should be designed in a professional manner. Types of questions used in questionnaires the questions of the questionnaire may be either closed ended or open ended. This means that a questionnaire may take a variety of questions.

1. Interview Method: It is a data collection method that involves an interviewer and interviewee engagement. It can also involve an interviewee visiting the respondent at home or in an office or any other convenient place as agreed upon by the two parties. The interviewer should be trained in order to handle an interview professionally. The interview place should be well arranged (conducive environment) and that two parties must have prior arrangements. An interview is based on specific questions which are reflected in an interview schedule/questionnaire.
2. Observation: It gives the most accurate data collection, because it involves direct involvement or direct observation of events as they happen. The observer can either be a participant or non-participant. The observations are appropriately recorded as a backup to the interview and questionnaire findings. In using this method the researcher may use modern technology to have face discussion with respondent by use of Zoom or skype
3. Verification of Documentary Sources: It is a method that involves the review of both the primary and secondary sources of information. Primary sources contain the original information and secondary sources contain documented information. Verification of documentary sources involves a thorough scrutiny for factual data from organizational documents like registers, reports, records, forms and other important operational documents. Verification is the use of third party information or documentation to confirm the accuracy of statements made.

A researcher uses documents, whenever possible, as the primary source of verification. The purpose of the gathering of documentary sources is to allow a researcher to have a better idea of what has been said or written about the subject. It is not for the intellectual beauty of the matter which one should do it. The search for documentary sources should allow an individual to put a more adequate glance at the data he will later gather.

1. In reference to sampling examine when it is necessary to use probability sampling and discuss the various types of probability sampling.                                                                                                (5 Marks)
   1. Sampling is used where the population to be studied is large and difficult to count each member of the population. Under sampling technique only percentage of the population is counted to a presentative of the entire population.
   2. Types of probability sampling: Probability Sampling Methods It is a method of drawing a portion of a population so that each member of the target population has a known and non-zero chance of being selected into the sample. Examples include;

a). Simple Random Sampling: This is a method or a technique where each member of the target population has the same chance of inclusion in the sample. It is one of the most commonly used and known sampling method. It is most suitable when the targeted population has uniform characteristics or it’s homogenous. In a homogenous population, there are no distinguishable subgroups or strata and that the characteristics of the population are spread throughout the population. In this method, all the units of analysis in the sampling from/in the register are identified and each unit is given a number. Consequently the numbers are placed in a box, mixed well and then picked at random. The numbers which are picked are the ones which are required by the researcher and they form the required sample. However the selection can also be done by means of a table of random numbers which can be generated either manually or by use of computer software programs.

b). Stratified Sampling Method: This method is appropriate in a research study that requires comparisons between various subgroups/ strata. The method involves the identification of various subgroups /strata. The subgroups/ strata are based on various variables or parameters e.g. Age, Sex, Education level, Geographical location etc This means that the members of a particular stratum will be more homogenous or alike than the entire population The sample size is determined from each separate stratum and this can be done using the random sampling method. The final sample population is obtained by combining all the samples selected from each of the stratum. The final sample must be a representative of the entire population.

c). Systematic Sampling Method It involves picking sample elements form the population at regular intervals. It is based on the sampling interval. The sampling interval is the standard distance between elements selected in the sample

d). Cluster Sampling: It involves drawing pre-existing heterogeneous groups called clusters. The members of the selected clusters become the effectual sample and they are included in the sample. In this method, it is the cluster that is selected randomly and not the individual members of a cluster. It the type of sampling in which the researcher selects a group and every member in the group participates in the research. Examples include: Cluster of schools, hospitals, municipal Councils, Town Councils etc.

e). Purposive Sampling Method: This is a deliberate nonrandom method of sampling. It aims at selecting a sample of people, setting and events with pre-determined characteristics. The sample elements are chosen because they fulfill a certain criteria. In the selection of the sample, the researcher relies on peoples experience and previous research findings. It is a common method used for case studies. It involves hand picking cases or subjects because they are informative and have the required characteristics.

f). Multi Stage Random Sample It’s the multi-stage sampling and involves;

Randomly select a given number of states/provinces/districts from the list of all states/provinces/districts. Randomly select from within each chosen state/province/district schools from the list of all schools of the defined type. Randomly select from within chosen school individuals from the list of all individuals of the defined types.

1. With the aid of an illustrations compare and contrast between exploratory and descriptive research designs.                                                         (3 Marks)

Exploratory Research

Exploratory research is a kind of research which seek to explore a problem to provide insights into and comprehension for more precise investigation. It focuses on the discovery of ideas and thoughts. The exploratory research design is suitable for studies which are flexible enough to provide an opportunity for considering all the aspects of the problem.At this point, the required information is loosely defined, and the research process is flexible and unstructured. It is used in the situation when you must define the problem correctly,

Descriptive Research: Descriptive research mean a type of conclusive research study which is concerned with describing the characteristics of a particular individual or group. It includes research related to specific predictions, features or functions of person or group, the narration of facts, etc.

The difference between exploratory and descriptive research can be drawn clearly on the following grounds:

1. Research conducted for formulating a problem for more clear investigation is called exploratory research. Research that explore and explains an individual, group or a situation, is called descriptive research.
2. The exploratory research aims at the discovery of ideas and thoughts whereas the primary purpose of descriptive research is to describe the characteristics and functions.
3. The overall design of the exploratory research should be flexible enough so that it provides an opportunity to consider various aspects of the problem. On the contrary, in descriptive research, the overall design should be rigid which protects against bias and also maximize reliability.
4. The research process is unstructured in exploratory research. However, it is structured in the case of descriptive research.
5. Non-probability sampling i.e. judgment or purposive sampling design is used in exploratory research. As opposed to descriptive research where probability (random) sampling design is used.
6. When it comes to statistical design, exploratory research has no pre-planned design for analysis. Unlike, descriptive research that has the pre-planned design for analysis.
7. A study of high-crime locations in Nairobi was conducted. The number of crimes in each of eight sample areas during a one year period was recorded. The number of crimes before and after the community policing program was inaugurated are indicated in the table below:  Number of crimes by area

A B C D E F G H

14 7 4 5 17 12 8 9 Before the program

2 7 3 6 8 13 3 5   After the program

Using appropriate Method, test at the 5 % level of significance to determine if there has been a decrease in the number of crimes since the program was inaugurated. (5 marks)

**Solution**

H0 : μ1 = μ2

H1 : μ1 ≠ μ2

t = 

Calculate for ,  and S

14 7 4 5 17 12 8 9 2 7 3 6 8 13 3 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | X1 | X1 – | (X1 – )2 | X2 | (X2 – ) | (X2 – )2 |
| A | 14 | 4.5 | 20.25 | 2 | -3.875 | 15.015625 |
| B | 7 | -2.5 | 6,25 | 7 | 1.125 | 1.265625 |
| C | 4 | -5.5 | 30.25 | 3 | -2.875 | 8.265625 |
| D | 5 | -4.5 | 20.25 | 6 | 0.125 | 0.015625 |
| E | 17 | 7.5 | 56.25 | 8 | 2.125 | 4.515625 |
| F | 12 | 2.5 | 6.25 | 13 | 7.125 | 50.765625 |
| G | 8 | -1.5 | 2.25 | 3 | -2.875 | 8.265625 |
| H | 9 | -0.5 | 0.25 | 5 | -0.875 | 0.765625 |
|  | ΣX1 = 76 |  | Σ (X1 – )2= 142 | ΣX2= 47 |  | Σ (X2–)2= 88.875 |

X1 =  =76/8 =9.5 X2 =  47/8 =5.875

S=5.372

=147-88.875

5.375

=9.8837

S1  = 9.8837

=10

Now t0.05 (at v = 10) = 2.23 > 0.5

Thus we accept the null hypothesis.

Hence therefore

Hence there is significant decline in the number of crimes since the program was inaugurated

1. You are set to conduct a research on the impact of free education on school dropout rates for schools in Kuria district. Outline in detail the methodology you will follow in the study. It should include the following:
2. The type of research design: The study adopted a descriptive survey research design. This design was considered appropriate because it is capable of facilitating collection of data that describe specific characteristics of phenomenon in order to determine the status of a population with respect to one or more variables (Mugenda and Mugenda 2013). This design was adopted for three reasons; it allowed the researcher to adopt a holistic approach in the study sample schools; it was easy to use tools like questionnaires and interview schedule; it allowed for collection of data from a large number of respondents within a short period. The design was also suitable because it investigated the relationship between independent variable (factors for dropout and factors for transition) on dependent variables (dropout and transition rates) without being manipulated by the researcher.
3. The target population of interest for the study

The Target population has been defined as any group of people or observation, or test in which the researcher happens to be interested. Target population or universe of study, is defined as all the members of a real or hypothetical set of people, events or objects to which an investigator wishes to generalize the results of a research study. Mugenda and Mugenda (1999) says that population refers to an entire group of individuals, events or objects having a common observable characteristic. The target population for this study was therefore all the 31 public primary schools as private primary schools are deemed inappropriate for this study because there are conditions such as tuition fees payment, staffing issues, admission and grade promotion criteria among others obtaining in the latter which may not obtain in the former. Further, only those with enrolment up to class 8 were considered. The target population therefore comprises of 31 public primary schools: their pupils, class teachers and head teachers. The accessible population comprised 1072 pupils in class eight, 26 class eight teachers and 26 head teachers.

1. The population frame

Sampling Frame

Category Population Sample size

Pupils 1072 50

Class teachers 31 10

Head teachers 31 10

Class 8 dropout girls 400 40

Parents 1,000 30

Total 2,534 140

1. Sampling method: Simple random sampling was used in selecting the pupils to be included. All pupils in class eight in each school were given numbers, which were written on pieces of paper. The papers were folded and mixed. The researcher then picked the number of pupils he needed from each school.
2. Sample size for the study

An ideal sample should be large enough so that the investigator can, with confidence and within specified limits, be certain that a different sample made using the same procedures can give approximately similar results. Mugenda and Mugenda (1999) suggest that 10 percent of the accessible population would be enough for descriptive studies. The researcher therefore included a total of 31 schools in the study. All the 31 head teachers of the sampled schools were included in the study. All the 1072 class eight teachers in the selected schools were included in the study. Ten percent of the total population of class eight pupils in the district that is, 107 pupils, was sampled.. The number of pupils to be sampled from each school was a proportion of the total number of pupils in that class against the accessible population in the division.

 vi) Data collection: the method of data collection to be used for research study is both questioners and interview

vii) Sampling Error: : Discrepancy between the characteristics of the population and the characteristics of the sample, though the sample is drawn from that particular population. The sampling error will be +5- (- 5)

viii)Hypothesis: The research seek to answer the question to whether the free education has led to decrease in school dropout among standard eight pupil in Kuria

(10 marks).