

THE INSTITUTE OF FINANCE MANAGEMENT



**FACULTY OF COMPUTING AND MATHEMATICS
DEPARTMENT OF INFORMATION TECHNOLOGY
BACHELOR OF COMPUTER SCIENCE AND BACHELOR OF SCIENCE IN
INFORMATION TECHNOLOGY
YEAR 3**

ITU/CSU 08108: IS RESEARCH METHODS

**END OF SEMESTER ONE EXAMINATION
ACADEMIC YEAR 2023/2024**

DATE: 12 February 2024

TIME ALLOWED: 3 HOURS

GENERAL INSTRUCTIONS:

1. This paper consists of two sections, section A and section B.
2. Attempt ALL questions in section A and ANY two questions in section B in the booklet provided.
3. Marks are allocated at the end of each question; plan wisely.
4. Your answer should be relevant and to the point.
5. You are reminded to adhere to ALL Institute's Examination Regulations.

SECTION A (40 marks)

Attempt ALL questions

QUESTION 1

Write **TRUE** for the correct statement and **FALSE** for the incorrect statement in the answer book provided. (20 marks, each 1 mark)

- i) In a disguised observation method, respondents are unaware they are being observed and thus behave naturally and vice versa. **T**
- ii) A formal document that presents the research objectives, the design of achieving these objectives, and the expected outcomes/deliverables of the study is called a proposal. **T**
- iii) In interval sampling, every unit falling after a chosen gap of units is included in the sample.
- iv) Parametric tests such as Analysis of Variance (ANOVA) can be conducted if data collected are not normally distributed. **F**
- v) Quota sampling involves dividing the entire population into different groups and then selecting the sample based on the proportion of each group in the whole population. **T**
- vi) Sampling errors can always be avoided. **T**
- vii) *It is not necessary for a sample to show the same characteristics as the population.* **T**
- viii) *Standard research ethics changes from person to person.* **T**
- ix) "Double-barrelled" questions ask two questions at one time and are very effective in survey research because they save valuable time.
- x) Quantitative variables include age, temperature, income, height and religion. **T**
- xi) Cronbach's alpha provides an overall reliability coefficient for a set of variables.
- xii) IBM SPSS has four windows: data editor, script editor, syntax editor and variable view. **T**
- xiii) Deductive reasoning starts with a theoretical idea and then sets out to test that idea. **T**
- xiv) Inductive reasoning looks at the problem and then develops a theory to explain the situation.
- xv) In qualitative studies, the statistical testability of null hypotheses is the focus of the research design.
- xvi) Spearman ranked-order correlation statistical test tests the relationship between one independent categorical variable and one or more dependent categorical variables.

- xvii) Two observers may observe the same event but may draw different inferences in the observation method. T
- xviii) Structured interviews do not follow any particular sequence but rely on spontaneity to direct the conversation. F
- xix) A measurement item is called a system of ideas such as propositions, assumptions, etc., which explain a particular phenomenon such as cause-effect relationships. F
- xx) Information systems is a multi-perspective field; therefore, it should have a pluralism of research methods.

Short answer questions (20 marks)

QUESTION 2

- a) Define the term "research problem". (5 marks)
- b) Briefly describe any four (4) sources of the research problems. (10 marks)
- c) Explain five critical aspects to keep in mind when designing a research questionnaire (5 marks)

SECTION B (60 marks)

Attempt any TWO questions

QUESTION 3

- a) List five (5) assumptions for conducting an Independent t-test. (5 marks)

A hacker is interested in evaluating the effectiveness of three mobile app hacking methods. The hacker targeted a group of 24 subjects. The hacker considers this group the equivalent of a random sample from the population of interest. Three subgroups of eight (8) subjects each are formed randomly; the subgroups are then hacked into one of the three methods. Upon completion of the hacking process, the hacker evaluated the hacking methods. Each hacking method is represented with numbers (1,2,3). The results of the evaluation are indicated in Tables 1 and 2.

Required:

- b) For one reason, justify the statistical test used to evaluate the hacking methods. (5 marks)
- c) Provide an interpretation of the evaluation results in Table 2 using the APA (15 marks) referencing style.
- d) With one reason, which hacking method was effective? (5 marks)

Table 1: ANOVA results

SCORE		ANOVA			
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	50.083	2	25.042	6.053	.008
Within Groups	86.875	21	4.137		
Total	136.958	23			

Table 2: Post Hoc Results

Tukey HSD

(I)METHOD	(J)METHOD	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.13	1.017	.992	-2.44	2.69
	3	-3.00*	1.017	.020	-5.56	.44
2	1	-.13	1.017	.992	-2.69	2.44
	3	-3.13*	1.017	.015	-5.69	-.56
3	1	3.00*	1.017	.020	.44	5.56
	2	3.13*	1.017	.015	.56	5.69

QUESTION 4

a) With reason, classify the following data as primary or secondary data:

- Number of undergraduate students participating in e-betting that was obtained from the survey. (2 marks)
 - Frequency of using M-Pesa for the last two years as reported by Vodacom Tanzania. (2 marks)
 - Number of e-learning users at the Institute of Finance Management (IFM) as obtained from IFM e-Learning Management System. (2 marks)
 - Cybercrime incidence statistics obtained from television or newspapers. (2 marks)
- b) Explain four (4) ethical rules that should be considered when collecting data for research. (8 marks)
- c) Sampling allows gathering data from a population subset to make observations and statistical inferences about that population.

Required:

- i) Describe the four (4) sampling steps. (8 marks)
- ii) Differentiate between judgemental sampling and convenience sampling methods. (6 marks)

QUESTION 5

- a) Define the term R^2 (R square). (4 marks)

Assume that NMB gave you consultancy work to investigate the factors influencing the actual use (usage) of *NMB Mkononi*, a mobile banking app. A preliminary investigation indicates that the following factors may influence the acceptance of *NMB Mkononi*: Computer Self-Efficacy, Convenience, Management Support and User Satisfaction. You obtained the results shown in Tables 1, 2 and 3.

Required:

- b) Provide an interpretation of the results presented in Tables 1 and 2. (Hint: pay attention to F-ratio and Sig. value for table 1 and R square for table 2). (10 marks)
- c) Provide a detailed interpretation of the regression analysis results indicated in Table 3. (16 Marks)

Table 1: Model Summary Results

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.750 ^a	.562	.552	.62481	.562	55.256	4	172	.000

a. Predictors: (Constant), Satisfaction, CompEfficacy, MgtSupport, Convinence

Table 2: ANOVA Results

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	86.285	4	21.571	.000 ^b
	Residual	67.146	172	.390	
	Total	153.431	176		

a. Dependent Variable: ActUse

b. Predictors: (Constant), Satisfaction, CompEfficacy, MgtSupport, Convience

Table 3: Regression Analysis Results

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	1.136	.211		.000
	Convience	.046	.086	.046	.597
	MgtSupport	-.116	.085	-.114	.177
	CompEfficacy	.388	.065	.415	.000
	Satisfaction	.459	.085	.454	.000

a. Dependent Variable: ActUse

QUESTION 6

a) Define with one example the following types of data:

- i) Nominal (2 marks)
- ii) Ordinal (2 marks)
- iii) Interval (2 marks)

b) A researcher is interested in understanding whether there is a difference in online gaming frequency based on the educational level of respondents (undergraduate and postgraduate).

Required:

- i) Suggest with a reason the appropriate statistical test that the researcher can use. (8 marks)
- ii) Explain four (4) assumptions related to the data used in the study in which the suggested statistical test in part 6.2.1 above can be applied. (8 marks)

- iii) Assuming that the researcher has used the statistical test, as you have (8 marks)
explained in part 6.2.1, use the APA referencing style to report the output
of the statistical test (Hint: $t = 2.428$, $df = 38$ and Sig (2-tailed) = 0.037)