

**CMR Institute of Technology
Department of Management Studies**

Answer key

III Internal test – II semester MBA (2017-19 Batch)

Subject: Research Methods

Sub Code: 17MBA23

Date: 23.05.2018

Time: 9:00-10:30

Duration: 90 mins

Part A - Answer Any Two Full Questions (16*02=32 Marks)

1. a) What is meant by cross tabulation? Give an example

Cross tabulation is a process of collecting raw data and displacing them on compact statistical tables for further analysis; it is a tool that allows you to compare the relationship b/w the two variables. Cross tabulation is a process of comparing one variable with various characteristics and attributes in a particular or systematic format.

b) Types of reports

1. Technical report / Thesis

This is comprehensive full report of the research process and its outcome. Primarily meant for academic community. It follows a specific pattern, Couched with technical language.

2. Popular report

Designed for an audience of executives/ administrators and non technical users, reader is less concerned about the methodological details, but interested in studying the major findings and conclusions and applying the findings to decisions.

3. Interim report

This is a short report, contains either first result or final outcome. It helps to keep alive the agency's interest in the study. To avoid time lag between data collection and presentation of the report – interim report can be submitted.

4. Summary report

Prepared for the consumption of the lay audience, the general public, findings are of general interest. It is written in non technical simple language, 2-3 pages. This is suitable for publication in daily newspaper.

5. Research abstract

Short summary of technical report, by doctoral students.

Brief presentation of thesis, to decide the area of specialization and interest.

6. Research article

Is designed for publication in a professional journal

c) Define the term “hypothesis”. Explain the various steps involved in testing of hypothesis?

- **Step1.** Set of null hypothesis

It is proposed with the intent of receiving a rejection, denoted by H₀.

Ex: If we want to show that sales and advertisement expenditure are related, we formulate H₀ the training programme is not effective.

- **Step2.** Set up Alternative hypothesis:-

Rejection of H₀ leads to the acceptance of H₁ of indicate the relationship between two variables.

Ex: sales are affected by advertisement.

- **Step 3.** Set up a suitable level of significance Alpha

The size of the rejection region is decided by this. To ensure the result is free from decision maker's biasness of choice ALPHA must be determined before drawing samples.

- **step4.** Test statistics:
In this step the suitable statistical test for the analysis is selected. The test Statistical could be Z, t, X^2 or F depending upon the various assumptions.
- **step 5.** Determination of critical region:-
Before sample is drawn from the population the values of test statistic that will lead to rejection of acceptance of the null hypothesis. The one that leads to rejection of h_0 is called critical region on ALPHA and also on whether the test is one tailed or two tailed.
- **Step 6.** Computing the value of test Statistic:
Based on the random sample of size 'n'
- **Step 7.** making decision:-
The hypothesis may be rejected or accepted depending upon whether the value of test static falls in the rejection of the acceptance region.

2. a) Short note on Annova

ANNOVA stands for 'Analysis of Variance'. It is a technique of studying the cause and effect of one or more factor on a single variable. The underlying principle of Annova is to compare the differences in the different means of population by studying the amount of variations within the samples, with respect to the amount of the variation present b/w samples of the population.

b) What is executive summary; discuss its role in business research report?

Executive summary is a part of the research report where the researcher writes a brief summary of complete research. it gives an overview about the research.

It is an important part of the Report as mangers don't want to read the complete the report. Hence this section introduces them with the objective and contents of the research report briefly, which helps them in decision making.

c) Name any explain briefly the two types of errors in testing of hypothesis?

Two types of error in testing hypothesis

- Type I error
 - Type II error
- The acceptance or rejection of a hypothesis is based upon sample resulted and there is always possibility of sample not being representative of the population. This could result in errors. There are two types of errors occur in the hypothesis testing:-
1. Type I errors
 2. Type II errors

	Accept H_0	Reject H_0
H_0 true	correct decision	type I error
H_0 false	Type II errors	correct decision

If we reject a hypothesis when it should be accepted then the error is known as type I error. The probability of type I error is the level of significance 'ALPHA'.

ALPHA = P[type I error] = p[reject H₀/H₀ is true]
 If we accept the wrong hypothesis then it is type II error:-
 p[type II error] = p[Accept H₀ / H₀ false]= Beta
 Known as the power of test.

3. a) Distinguish b/w oral and written report?

Oral Report	written report
<ul style="list-style-type: none"> • This type of report is presented orally to the target audience. • it does not have a format. • It may not contain all the information • It is short. 	<ul style="list-style-type: none"> • It is written and submitted by the research form of a document. • Format needs to be followed. • Consists of technical language • It is detail.

b) Difference between parametric and non- parametric tests?

Parametric test	Non parametric Test
<ol style="list-style-type: none"> 1. They utilize all information provided by the sample, hence these are more efficient. 2. (t-test and Z-test) parametric test assume that the underlying population to be normally distributed some tests also requires equal variance of both population. 3. These test can be used even when these are slight departure from normality if the sample size is large. 	<p>These do not utilize all the information provided by the sample, Hence these tested are less effective than corresponding parametric test to get same efficiency these needs lay sample size.</p> <p>Non parametric test have no assumptions regarding distribution of parent population.</p> <p>When sample size is small non parametric tests are preferred. This is more so when the population distribution is badly skewed of not known.</p>

c) Explain the steps involved in processing the data?

The various steps in processing of data may be stated as:

- Identifying the data structures
- Editing the data
- Coding and classifying
- Transcriptions of data
- Tabulation of data

Preparation for analysis

Major criterion in this is to define the data structure. A data structure is a collection of related variables and can be conveniently represented as a graph whose nodes are labeled by variables. The data structures also define

and states the preliminary relationship b/w variables group of variables that have been preplanned by the researcher.

A simple structure could be linear structure, in which one variable leads to the other and finally to the resultant end variable.

Editing: Editing is a process of checking to detect and correct errors and omissions.

Data editing happens at two stages

1. at the time of recording the data – considers the following questions in mind

- have variable descriptions been specified
- Have labels for variable names and value labels been defined and written?

2. Second at the time of analysis of data.

It is a requisite before the analysis of the data is carried out. This ensures that the data is complete in all respect for subjecting them to further analysis.

- Is the coding frame complete
- Is the number of cases correct
- Are there differences b/w questionnaire, coding frame and data?

The editing step checks for the completeness, accuracy and uniformity of the data set created by the researcher.

Completeness: First step of editing is to check whether there is an answer to all the questions, variables set out in the data set.

E.g.: family income can be inferred from occupation of family members, sources of income, spending, saving and borrowing habits of family members.

Accuracy: a random check process can be applied to trace the errors at this step. Consistency in response can be checked in this step. Cross verification to a few related responses would help in checking for consistency in responses. The reliability of data set would heavily depend on this step of error correction.

Uniformity: should; look of uniformity in interpretation of questions and interpretation of questions and instructions by the data recorders. E.g. the responses towards specific feelings could have been queried from a positive as well as a negative angle.

Finally editing of data sets is to maintain a log of all corrections that have been carried out at this stage.

Coding and classifications

Coding: Is a Process to assign numerals or other symbols to the several responses of the data set.

The recording of the data is done on the basis of this coding scheme.

Numeric coding: coding need not necessarily be numeric. It can also be alphabetic. Coding has to be compulsorily numeric, when the variable is to be subject to further parametric analysis.

Alphabetic coding: a mere tabulation or frequency count or graphical representation of the variable may be given an alphabetic coding.

Zero coding: in many instances when manual analysis is done, a code of 0 would imply a “no response”.

	Variable /observation	Response category	code
	Organization	Private Public	Pt Pb

		government	Go
	Vehicle performance	Excellent	5
		Good	4
		Adequate	3
		Bad	2
		worst	1

Classification

When open ended questions are received, classification is necessary to code the response. A classification method should meet certain requirements or should be guided by certain rules.

First, classification should be linked to the theory and the aim of the particular study. This objective will determine the dimension chosen for coding.

Second, classification should be exhaustive. There must be a category for every response.

E.g.: classification of marital status into 3 categories married, single, divorced is not exhaustive, because responses like widower, separated cannot be fitted into the scheme here an open ended question will be the best mode of getting the response.

Transcription of data

The transcription process helps in presentation; of all responses an observations on data sheets, which can help the researcher to arrive at preliminary conclusion as to the nature of the sample collected etc.

It is an intermediary process b/w data coding and data tabulation.

Types of transcription

- Manual transcription
- Long worksheets

Computerized data processing

When the sample size is large or when the variables studied is vast and interrelated, data can be transcribed to the computer for further processing.

Use natural coding schemes

Avoid use of blank spaces as a coding category

Do not use “+” or “-” symbols.

Tabulation

Tabulation is a process of summarizing raw data and displaying them on compact statistical tables for further analysis.

It involves counting the number of cases falling into each categories identified by the researcher.

Tabulation can be done manually or through the computer. It depends on the size, type of study, cost considerations time pressures and availability of software packages.

Manual tabulation – counting

Age group	Tally marks	No of responses
Below 30	11	2
20-39	1111	5

Computerized tabulation – with software packages – SPSS (Statistical Package for Social Sciences)

Frequency distribution and class intervals

Variables that are classified according to magnitude or size are often arranged in the form of a frequency table. In constructing a table it is necessary to determine the number of class intervals to be used and the size of the class intervals.

Two types of variables

Continuous variables – has unlimited number of possible values b/w the lowest and highest with no gaps or breaks e.g. age, weight, temperature.

Discrete Variables – can have series of specified values with no possibility of values b/w these points. Each value of a discrete variable is distinct and separate.

E.g. Gender of persons (male/female), occupation (salaried, business, professional), car size (800cc, 1000cc, 1200cc).

Class intervals – the number of class intervals may not be less than 5 or more than 15.

Class intervals must be clearly designated in a frequency table in such a way as to obviate any possibility of misinterpretation or confusion.

Part -B (01*08= 08 marks)

Describe the components of a written research report.

Research report format

Report outline

A. Prefactory items:

1. Title page
2. Researcher's declaration
3. The certificate of the research supervisor
4. Preface / acknowledgements
5. Table of contents
6. List of tables
7. List of charts and graphs
8. Abstract or synopsis

B. Body of the report

1. Introduction

- a) Theoretical background of the topic
- b) Statement of the problem
- c) Review of literature
- d) The scope of the present study
- e) The objectives of the study
- f) Hypothesis to be tested

- g) Definitions of the concepts
 - h) Model, if any
2. The design of the study
- a) Methodology
 - I. Overall typology
 - II. Methods of data collection
 - b) Sources of data
 - c) Sampling plan
 - d) Data collection instruments
 - e) Field work
 - f) Data processing and analysis plan
 - g) An overview of the report
 - h) Limitations of the study
3. Results: findings and discussions
4. Summary, conclusion and recommendations
- C. Terminal items
- 1. Bibliography
 - 2. Appendix
 - a) Copies of data collection instruments
 - b) Technical details on sampling plan
 - c) Complex tables
 - d) Glossary of new terms used in the report