

Subject Name: Business Research Methods and Statistics
Subject Code: 25MBA108

Max. Marks: 50
Time: 2:30 hours

Instructions

- Q1, Q2 and Q3 consist of internal options, solve any 1
- Q4 is compulsory
- Use of Simple calculator is allowed

CO #	Cognitive Ability	Course Outcome
CO3	Apply	Make use of scientific principles of research to SOLVE contemporary business research problems.
CO4	Analyse	Examine the various facets of a research problem and ILLUSTRATE the relevant aspects of the research process from a data driven decision perspective.
CO5	Evaluate	Judge the suitability of alternative research designs, sampling designs, data collection instruments and data analysis options in the context of a given real-life business research problem from a data driven decision perspective.
CO6	Create	Design and develop a comprehensive business research report by integrating appropriate statistical analyses, graphical data representations, and Microsoft Excel tools to support data-driven decision-making.

Q1.	<p>Attempt any 1 out of 2 (10 marks)</p> <p>a) A Human Resource Department wants to measure their "Employee Job Satisfaction." Develop a Research Title, & construct a Structured Questionnaire containing at least 8 questions using different Rating Scales including demographic questions.</p> <p>b) The following are the monthly profits (in lakhs) of a small business: 12, 15, 18, 20, 22, 25, 28, 30, 32, and 35. Identify the Quartile Deviation (Q.D.), Coefficient of Variation (CV) and explain each step in your calculation manually. Also, interpret what the value of Q.D. indicates about the consistency or variability of the firm's profits.</p>	CO1
Q2.	<p>Attempt any 1 out of 2 (10 marks)</p> <p>a) Analyze which research design best supports, if researcher is studying customer satisfaction for an online shopping site. Distinguish it from alternative research designs.</p> <p>b) A startup collected data on employees' job satisfaction and productivity scores. Using this dataset, differentiate between dependent and independent variables, and explain how the relationship could be tested statistically. Supporting dataset:</p>	CO4

	Employee	Job Satisfaction Score (1–10)	Productivity (Tasks Completed per Week)	
	E1	6	42	
	E2	8	55	
	E3	5	38	
	E4	9	58	
	E5	4	35	
	E6	7	50	
	E7	8	54	
	E8	6	46	
	E9	5	40	
	E10	9	60	
	E11	7	52	
	E12	8	56	
Q3	<p>Attempt any 1 out of 2 (10 marks)</p> <p>a) Green Fuel Motors Pvt. Ltd., an Indian electric vehicle (EV) manufacturer, recently launched its affordable e-scooter model Spark Go. Despite an enthusiastic market response during the initial launch, sales have plateaued after six months. Management suspects that customer misconceptions regarding EV maintenance and battery life, or ineffective promotional communication, may be key factors behind the stagnation. As a Business Research Consultant, evaluate and justify the systematic steps of the research process that Green Fuel Motors should follow to accurately diagnose the causes of low sales and recommend evidence-based marketing strategies to address the issue.</p> <p>b) An ice cream company such as Dinshaw’s intends to investigate the effect of rising temperature on its online ice cream sales. As a Business Research Analyst, you are required to design a complete and evidence-based research framework for this study.</p> <p>i) Evaluate and justify the most appropriate research design (exploratory, descriptive, or causal) to establish the relationship between temperature and sales. (2 marks)</p> <p>ii) Formulate and appraise all four types of hypotheses (null, alternative, directional, and non-directional) applicable to this context. (4 marks)</p> <p>iii) Identify and justify the key independent, dependent, and control variables that should be considered in this study. (2 marks)</p> <p>iv) Recommend and justify an appropriate graphical or statistical method (such as scatter plot, regression chart, or trend line) that best illustrates the cause-and-effect relationship between temperature and online ice cream sales. (2 marks)</p>			CO5
Q4	<p>"A travel company, Global Horizons Pvt. Ltd., wants to test whether international travel destination preferences differ significantly among travelers from three Indian states.</p>			CO6

The management aims to use the findings to design state-specific marketing and promotional strategies. The critical Chi-Square value (χ^2) at the 5% significance level with 4 degrees of freedom is 9.49.

As a Research Analyst, conduct a complete Chi-Square analysis and provide managerial insights based on the results.

Tasks:

- i) Formulate and justify the null (H_0) and alternative (H_1) hypotheses for testing independence. **(4 Marks)**
- ii) Calculate and present the expected frequencies and the Chi-Square test statistic (χ^2), explaining the decision rule. **(6 Marks)**
- iii) Interpret the results to conclude whether travel preference depends on the state of residence. **(5 Marks)**
- iv) Recommend how the findings can guide segmentation and promotional strategy design for each state. **(5 Marks)**

Supporting dataset:

State	Thailand	Dubai	Singapore
Maharashtra	40	35	25
Karnataka	30	25	45
Delhi	50	20	30
