Chapter 4

Analysis and Interpretation of Data

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4.1. Introduction

This chapter deals with the analysis and interpretation of data. Analysis of data means studying the organised material in order to discover the inherent facts. The data are studied from as many angles as possible to explore the new facts. (Koul, 1998). Statistical techniques have contributed greatly in gathering, organising, analysing and interpreting numerical data. Inferential or sampling statistics are used because they enable the researcher to make generalisations or inferences about population from the observations of the characteristics of samples. The process of analysis is the breaking down of complex factors into simpler parts and putting the part together in new arrangements for purposes of interpretation. Interpretation is the critical examination of the results obtained in the study.

The aim of research is to identify Challenging areas in learning economics and Effective teaching Strategy to address this for class XIth students of Bhopal district. In order to evaluate and understand, the data that was gathered and to describe and evaluate the study's findings in line with its goals, the scholar applied statistics. The analysis is done in two section in first section the analysis of questionnaire has been done and then in the second section the analysis of score obtained in achievement test is done.

Section 1

4.2. Analysis of Questionnaire

The Researcher conducted a preliminary survey among class XIIth students to find out the Challenging areas in learning economics. By the analysis of data collected through the questionnaire, the Investigator recognised that there is some of the difficulties experienced by students in learning economics at class XI. There are total 10 questions in the questionnaire to know the opinion and feelings about the hard spots in economics. It consists of three open ended questions and rest are checklists. The questionnaire was administered on 50 class XIIth and ITEP students. Responses were analysed and the details are given in the following tables.

4.3 Data Base:

The Data was collected from the following 3 institutes of Bhopal.

Sr. No.	Name of school/ Institute	No. of Students
1.	Govt. Subhash Excellence Higher Secondary, Bhopal	20
2.	Demonstration Multipurpose School (DMS), Bhopal	15
3.	Regional Institute of Education, Bhopal	15

Table 4.1 Sample of students selected for survey.

4.4 Analysis of data

Data are analysed on the basis of the Objectives formulated in the research are as follows:

Objective-1: To determine specific topics within 11th standard Economics that students find difficult.

For this objective the data are analysed on the basis of questions asked in the questionnaire-

4.4.1 Do you feel Economics is the most difficult subject in Higher secondary level?

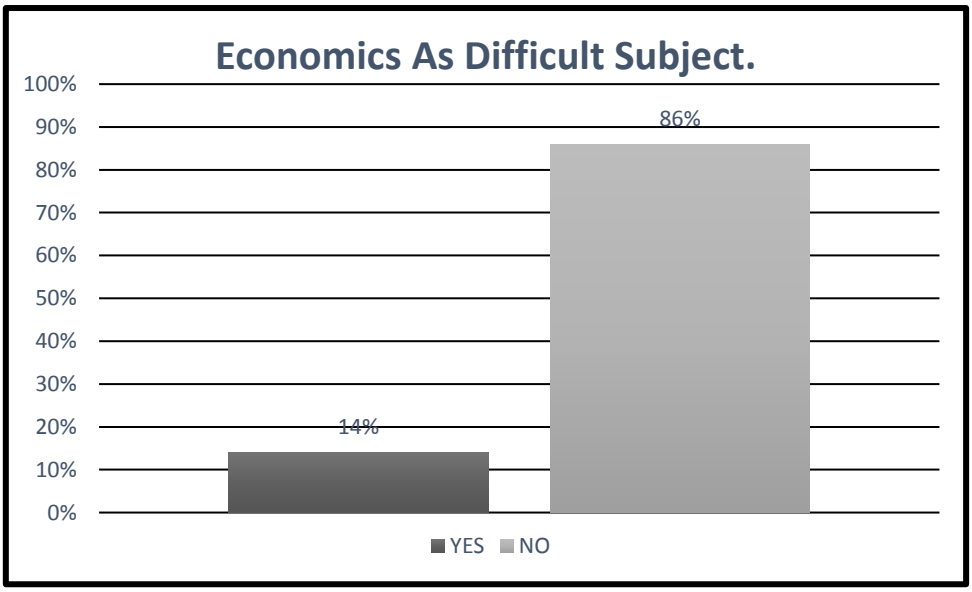

Fig 4.1 Student's response of economics as difficult subject.

A **significant majority (86%)** of respondents do not find Economics to be a difficult subject. This suggests that, for most students, the subject is either well-taught, accessible, or aligns with their learning preferences. **14%** of students (7 out of 50) **do perceive Economics as difficult**. This indicates a **s**mall but important group of learners who may be facing challenges possibly due to:

- Conceptual difficulty
- Teaching methods
- Lack of interest or prior knowledge
- Mathematical or theoretical content

While the general sentiment is positive, the 14% minority should not be ignored**.** the concerns of these students who struggle should be addressed proactively to ensure inclusive and effective learning for all.

4.4.2. Which area of Economics do you feel most difficult?

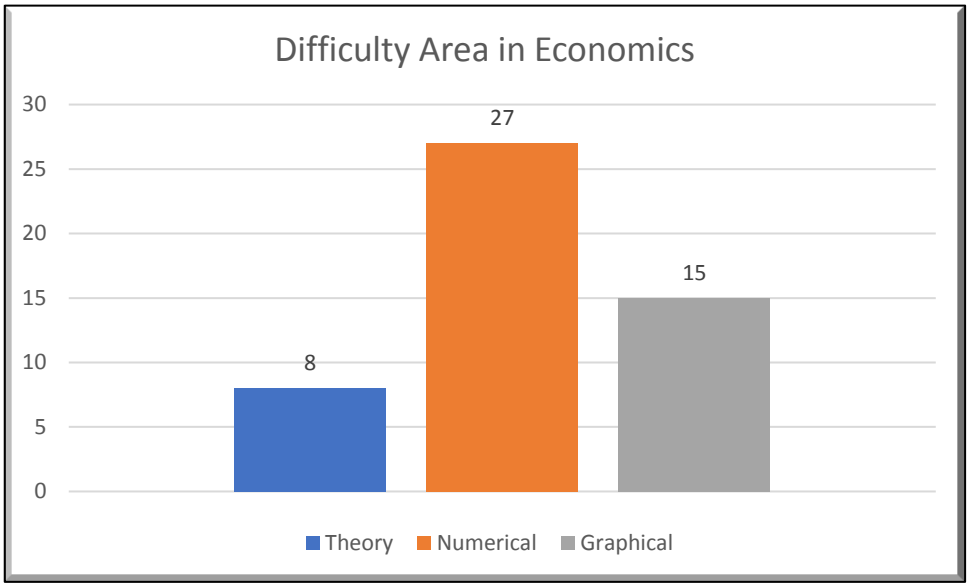

Fig4.2 Students' responses of difficult area in Economics

The analysis of student responses, as illustrated in the above bar chart reveals significant insights into the aspects of the subject perceived as most challenging. Among the 50 respondents, a majority—**27 students (54%)**—identified **numerical problems** as the most difficult area in Economics. This indicates a common struggle with mathematical applications, such as calculations, interpreting quantitative data, and applying formulas. The **graphical component** of Economics was reported as challenging by **15 students (30%)**, suggesting that

a substantial portion of learners find it difficult to understand and interpret economic diagrams, such as demand and supply curves or shifts in equilibrium. In contrast, only **8 students (16%)** found **theoretical concepts** difficult, implying that most students are relatively comfortable with conceptual understanding and textual content.

These findings highlight the need for a pedagogical shift toward supporting students in numerical and graphical aspects of Economics. Teachers may consider incorporating more practice-based learning, visual aids, interactive graphing tools, and step-by-step problem-solving exercises. While theoretical understanding is generally well-grasped, targeted interventions are essential to ensure that all students, particularly those struggling with calculations and diagrams, are adequately supported in their learning journey.

4.4.3. Which part you studied in your class XIth?

All the students marked the Micro Economics because schools are affiliated to CBSE board and in it this the portion of the syllabus of the class 11th.

4.4.4. Which chapter you find difficult to learn in Micro economics?

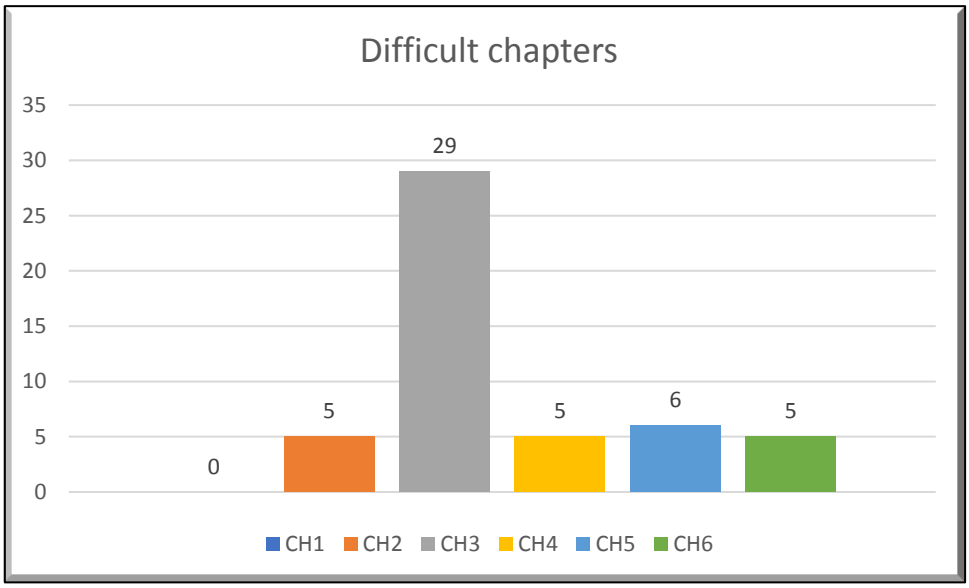

Fig4.3 Students' response on difficult chapters.

The chapter-wise response data on difficulty experienced by students in Class 11 Economics reveals **significant variation** in perceived challenge levels. The data shows that **Chapter 3 (CH3)** is overwhelmingly reported as the most difficult, with **29 (58%) students** indicating challenges in this chapter. This suggests that the content in CH3 may be **conceptually dense**, **analytically demanding**, or include **numerical/graphical elements** that students find hard to

grasp. In contrast, **Chapter 1 (CH1)** had **no responses**, indicating it is perceived as the least difficult or most accessible chapter—possibly due to introductory or familiar content.

Other chapters such as **CH2, CH4, CH5, and CH6** received a **moderate number of difficulty responses**, ranging from **5 (10%) to 6 (12%) students each**, implying that while they pose some challenge, they are not as significantly problematic as CH3. The relatively balanced numbers in these chapters suggest that students might struggle with certain concepts or sections, but not the entire chapter.

This analysis highlights the need for **intensifying instructional attention on Chapter 3**, such as simplifying difficult concepts, using more examples, or integrating visual aids.

4.4.5 Which part you find hardest one?

A significant number of respondents identified chapter 3 as particularly difficult, pointing to complex subtopics such as laws of production, cost curves, types of costs, returns to scale and marginal analysis. At the same time, the survey data also revealed that some students chose other chapters—including Chapters 2, 4, and 5—as difficult, reflecting variability in learning experiences and individual comprehension levels. Interestingly, **some students left this portion of the survey blank**, indicating either a lack of strong opinion, confusion about the question, or uncertainty in identifying a specific chapter as most difficult.

4.4.6 Preference of learning economics through-

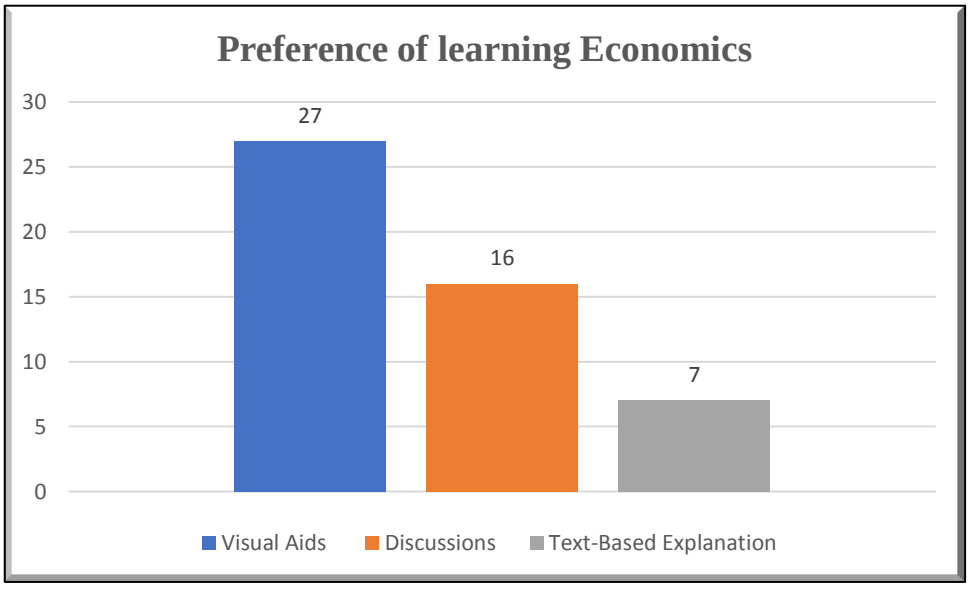

Fig4.4 Students' preference of learning Economics.

The analysis of student preferences for instructional methods in Economics reveals a clear inclination toward **visual learning strategies**. Out of the total responses, a **majority of students (54%)** indicated that they prefer **visual aids**—such as diagrams, charts, graphs, videos, and presentations—as their primary mode of understanding Economics. This highlights the importance of incorporating **visually engaging content** in teaching practices.

In comparison, **32% students** expressed a preference for **discussion-based learning**, suggesting that a significant portion of learners benefit from **interactive, collaborative environments** where they can engage in dialogue, ask questions, and clarify doubts. This preference points to the value of creating opportunities for **peer learning and teacher-student interaction** during classroom sessions.

Only **14% students** preferred **text-based explanations**, indicating that **traditional lecture and textbook-driven methods** are the least favoured. While these methods remain important for detailed reading and theoretical grounding, the data suggests that relying solely on text may not be the most effective approach for the majority of students.

In conclusion, the findings advocate for a **blended teaching approach**, with a strong emphasis on visual aids supported by interactive discussions. Such a strategy can cater to diverse learning styles, increase student engagement, and enhance overall comprehension in Economics instruction.

4.4.7. What methods do you think would help you to improve your understanding of Economics?

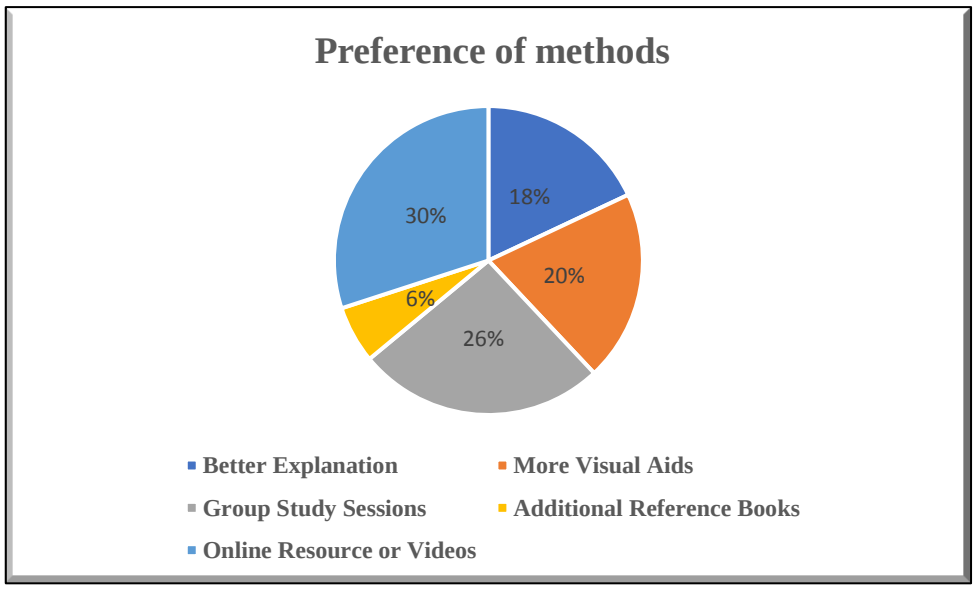

Fig 4.5 Preference of methods

When asked what could help them better understand Economics, students shared insights that speak volumes about how they learn best in today's classroom. The most common suggestion, chosen by **30% students**, was the use of **online resources or educational videos**. This clearly reflects how comfortable and engaged students feel when learning through multimedia. Many find it easier to grasp complex economic ideas when they can pause, replay, or visually follow a concept explained in a video format—something textbooks can't quite offer.

Group study sessions were the next most popular response, with **26% students** seeing them as valuable. This shows that students don't want to learn alone—they want to collaborate, discuss, and help each other out.

Visual aids like diagrams, flowcharts, and infographics were suggested by **20% students**. It's no surprise—many students process information better when they can see how different concepts connect, rather than just read about them. Visual tools can simplify what seems complicated and make lessons more engaging.

Interestingly, **18% students** felt that what they needed most was simply a **better explanation**. This is an important reminder that sometimes the issue isn't with the content, but with how it's taught. Students are asking for clearer, more relatable teaching, where concepts are broken down and delivered in ways they can truly connect with.

Finally, only **6% students** felt that **additional reference books** would help. This suggests that while extra reading can be useful, most students prefer more interactive, modern, and practical approaches to learning over traditional methods.

Overall, the message from students is clear: they want **engaging, visual, and supportive learning experiences**—not just more content. As educators, responding to these voices by integrating **technology, collaboration, and clarity** into our teaching can make Economics not only easier to understand, but genuinely more enjoyable to learn.

4.4.8. Do you feel the economics you read in your classroom is relatable and applicable in your real-life situations?

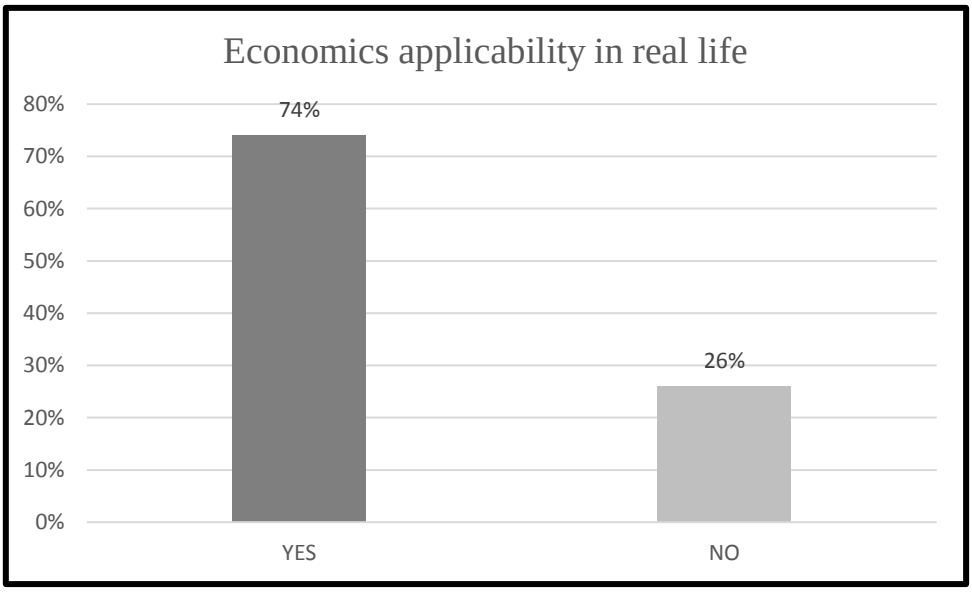

Fig 4.6 Applicability of Economics in real life.

Data revealed that a strong majority of students 37 out of 50 (**74%)** find the Economics they learn in class to be relatable and applicable to real-life situations, indicating that many are able to connect classroom concepts to everyday experiences like budgeting, decision-making, and understanding market behaviour. However, **13 (26%)** students expressed that they do not see this relevance, suggesting a gap between theoretical learning and practical application for some. This highlights the need for more real-world examples, case studies, and interactive teaching methods to ensure that all students can see the practical value of Economics in their daily lives.

4.5 Conclusion

This section depicts the findings and conclusions that emerged from the analysis of questionnaire for students. The major conclusions pertaining to this section are given below.

- A **significant majority (86%)** of respondents do not find Economics to be a difficult subject.
- A majority of **54% students**—identified **numerical problems** as the most difficult area in Economics
- The **graphical component** of Economics was reported as challenging by **30% students.**
- Only **16% students** found **theoretical concepts** difficult.

- **Chapter 3 (Production and cost)** is overwhelmingly reported as the most difficult, with **58% students** indicating challenges in this chapter and **Chapter 1 (Introduction)** is found to be the least difficult one with no students found it difficult. While **10% students** found **Chapter 2 (Theory of consumer behaviour), Chapter 4 (The theory of the firm under perfect competition) and Chapter 6 (Non- competitive market)** as the most difficult chapter and **12% students** found **Chapter 5 (Market equilibrium)** as the most difficult one**.**
- A majority of students (**54%**) indicated that they prefer **visual aids**—such as diagrams, charts, graphs, videos, and presentations—as their primary mode of understanding Economics. **32%** students expressed a preference for **discussion-based learning** and Only **14%** students preferred **text-based explanations**, indicating that traditional lecture and textbook-driven methods.
- For better understanding of Economics, the most common suggestion, chosen by **30% students**, was the use of **online resources or educational videos. 26% students** suggest **Group study sessions, 20% students** choses **Visual aids, 18% students** opt for a **better explanation** and only **6% students** suggest **additional reference books**.
- A strong majority of students **74%** find the Economics they learn in classroom to be relatable and applicable to real-life situations, indicating that many are able to connect classroom concepts to everyday experiences.

Section 2

4.6 Analysis of Achievement Test

The Researcher conducted an Achievement test (post-test) among both the group of Experimental and Control group of class XIth students to find out the Effectiveness of the Module made by the researcher. The test consists of total 25 multiple choice questions carrying 1 mark each. The test was administered on total 35(18+17) students of class XIth in which 18 experimental group students and 17 control group students. The scores were tabulated and then the mean, Standard Deviation and t-value of the variables were calculated. The details are given below.

Group	N	Mean	SD	D	df	Calculated t-value	Remarks
Control	17	10.94	3.39	2.39	33	1.736	Not Significant
Experimental	18	13.33	4.32				

Here, N=Number(size of sample), SD=Standard Deviation, D= Mean Difference, df= Degree of freedom

Table 4.2 Statistical value of achievement scores.

From the above table 4.5, it is evident that the calculated t-value for 33 degree of freedom is found to be 1.736. and the tabulated t-value for 33 degree of freedom at 0.05 level of significance is 2.035 that is the calculated t-value is smaller than tabulated t-value (1.736 < 2.035) which means the difference is not significant at 0.05 level of significance. Therefore, we have to accept the null hypothesis. This show that there is no significant difference between the mean of achievement score of control group and experimental group.

4.5.1 Interpretation

The mean score of the experimental and control group is 13.33 and 10.94 respectively. The difference between these two means is 2.39, which is in the favour of experimental group but the difference is not significant.

4.5.2 Justification

In the present study, the sample chosen by the investigator has examination after some time so the readiness of learning apart from their examination syllabus impacted their interest and attitude in learning. Due to small size of sample and less intervention time also impacted the intended result that researcher tries to achieve.