This chapter deals with the analysis and interpretation of data described in the methodology chapter. The present study is intended to find out the extent of data literacy among post graduate students on the basis of gender, locale of the college, type of management of the college, subject of specialization. The analysis is based on the following objective and hypothesis

**Objectives**

The objectives of the present study are presented below

* To know the extent of data literacy of post graduate students
* To test whether there exist any significant difference in the level of students in post graduate level regarding the data literacy in the following sub samples
* Gender
* Locale of the college
* Type of management of the college
* Subject of specialization

**Hypotheses**

* There will be significant difference in the level of data literacy among post graduate students on the basis of
* Gender
* Locale of the college
* Type of management of the college
* Subject of specialization

 Discussion of the result obtained through statistical analysis of the collected data is presented under the following headings

* Preliminary analysis
* Extent of data literacy among total sample and in relevant sub samples
* Comparison of mean score of data literacy among post graduate students based on gender, locale of the college, type of management of the college and subject of specialization

**Preliminary analysis**

 The important statistical properties of the scores on the variable data literacy were analyzed as a preliminary step. The mean, median mode, standard deviation, skewness and kurtosis were calculated for total sample are in the table 1

Table 1

*Mean, median, mode, standard deviation skewness and kurtosis for the total sample*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Median | Mode | Standard Deviation | Skewness | Kurtosis |
| Date | 600 | 23.76 | 24.00 | 25.00 | 6.31 | .-167 | .-442 |



*Figure 1.* Histogram for preliminary analysis

**Discussion of the result**

Table shows that the values of mean, median, mode of variable data literacy for total sample are 23.76,36 and 37 respectively. These values are almost equal which shows the possibility of the variable to follow normal distribution. The obtained value of skewness is -.166 which means the distribution is negatively skewed. The value of kurtosis is -.442 which suggests that the above distribution is leptokurtic. The distribution of the variable data literacy is approximately normal

**Major analysis**

**Extent of data literacy among post graduate students in the total sample and in the relevant sub samples**

Extent of data literacy among post graduate students in the total sample and in the relevant sub samples based on gender, locale of the college, type of management of the college and subject of specialization were established by using mean and percentiles

**Extent of awareness on data literacy for the total sample based on gender**

 The mean and percentile scores of awareness of data literacy for total sample are given in table 2

Table 2

*Mean and percentile scores of awareness on data literacy among post graduate students*

|  |  |  |
| --- | --- | --- |
| Mean Score | Percentile | Score |
| 23.76 | P10 | 16 |
| P20 | 18 |
| P30 | 20 |
| p40 | 22 |
| P50 | 24 |
| P60 | 26 |
| P70 | 27 |
| P80 | 29 |
| P90 | 32 |

*Figure 2.* Graphical representation of data literacy for the total sample based on gender

**Discussion of the result**

It is evident from the table that mean scores of on data literacy among post graduate students is 23.76.The possible minimum value for data literacy test is 8 and possible maximum value is 39.The mean score obtained for the data literacy test is 23.76 which is less than neutral value (25) which means that data literacy of post graduate students not satisfactory to certain extent.

Table also reveals the percentile score for total sample. The 10th percentile of the scores of the data literacy test is 16.This means only 10 percent of post graduate students lie below the score 16 and 90 percent of post graduate students lie above that score.

 The 90th percentile of the scores of the data literacy test is 32.This means only 10 percent of post graduate students lie above the score 32 and 90 percent of post graduate students lie below that score.

**Extent of data literacy among post graduate student for the relevant sub samples based on gender**

Table 3

*Mean and percentage score of data literacy test of male and female post graduate students based on gender*

|  |  |  |
| --- | --- | --- |
| Mean Score | Percentiles | Score |
| Male | Female | Male | Female |
| 21.55 | 24.11 | P10 | 13.5 | 16 |
| P20 | 17 | 18 |
| P30 | 18 | 21 |
| p40 | 19 | 23 |
| P50 | 21 | 24.5 |
| P60 | 24 | 26 |
| P70 | 25.50 | 27 |
| P80 | 28 | 32 |
| P90 | 29.5 | 32 |

*Figure 3.* Graphical representation of data literacy among post graduate student for the relevant sub sample based on gender

**Discussion of the result**

The mean score of data literacy among male and female post graduate students are 21.55 and 24.11.Table also reveals percentiles scores for data literacy among male and female post graduate students. The 10 the percentile obtained for male and female post graduate students are 13.5 and 16 respectively. This means 10 percent of male and female post graduate students lie below the score 13.5 and 16 respectively and 90 percent lie above that score.

**Extent of data literacy among post graduate student for the relevant sub samples based on locality**

Table 4

*Mean and percentile score of data literacy test among post graduate students based on locality*

|  |  |  |
| --- | --- | --- |
| Mean Score | Percentiles | Score |
| Rural | Urban | Male | Female |
| 24.03 | 20.59 | P10 | 16 | 14 |
| P20 | 18 | 16 |
| P30 | 20 | 18 |
| p40 | 23 | 19 |
| P50 | 25 | 20 |
| P60 | 26 | 22 |
| P70 | 27 | 24 |
| P80 | 29 | 25 |
| P90 | 33 | 27 |

*Figure 4.* Graphical representation of data literacy among post graduate student for the relevant sub sample locale of the college

**Discussion of the result**

The obtained mean for rural and urban post graduate students in the data literacy test is 24.03 and 20.59.From the table, the 50th percentile of the scores of data literacy test for rural and urban post graduate students is 25 and 20.This mean 50 percent of rural and urban when post graduate students in below the score 25 and 20 respectively similarly, we can interpret other percentiles

**Extent of data literacy among post graduate student for the relevant sub samples based on subject of specialization**

Table 5

*Mean and percentile score of data literacy test among post graduate students* based *on subject*

|  |  |  |
| --- | --- | --- |
| Mean Score |  | Score |
| Science | Arts | Commerce | Language | Percentiles | Science | Arts | Commerce | Language |
| 27.58 | 21.67 | 23.76 | 20.59 | P10 | 21 | 14.2 | 15.10 | 14 |
| P20 | 24 | 18 | 17 | 16 |
| P30 | 25 | 19 | 19.3 | 18 |
| p40 | 26 | 20 | 22 | 19 |
| P50 | 27 | 22 | 25 | 20 |
| P60 | 29 | 24 | 27 | 22 |
| P70 | 31 | 27 | 29 | 24 |
| P80 | 33 | 26 | 30 | 25 |
| P90 | 35 | 29 | 32 | 27 |

*Figure 5.* Graphical representation of data literacy among post graduate student for the relevant sub sample based on subject

**Discussion of the result**

The analysis procedure estimated Data literacy based on subject of specialization and categorized them in to three categories viz, science, arts, commerce and language. Score greater than neutral value consider as data literat**e**. It is inferred from the table that science students have data literacy than arts, commerce, language students. The table also reveals that 10th percentile of the scores of data literacy test among post graduate students from science ,arts, commerce ,language are 21,14.2,15.10,14 respectively .This mean that only 10 percent of post graduate students from science, arts ,commerce ,language lie below the score 21,14.2,15 and10,14 respectively and 90 percent lie above that score. Similarly we can interpret other percentiles

**Extent of data literacy among post graduate student for the relevant sub samples based on type of management**

Table 6

*Mean and percentile score of data literacy test among post graduate students* based *on types of management*

|  |  |  |
| --- | --- | --- |
| Mean Score | Percentiles | Score |
| Government | Aided | Unaided | Government | Aided | Unaided |
| 24.39 | 24.54 | 21.37 | P10 | 16 | 16 | 14 |
| P20 | 18 | 19 | 16 |
| P30 | 20 | 22 | 18 |
| p40 | 22 | 24 | 19 |
| P50 | 25 | 25 | 19 |
| P60 | 28 | 20 | 23 |
| P70 | 29 | 28 | 25 |
| P80 | 30 | 30 | 26 |
| P90 | 32 | 33 | 28 |

*Figure 6.* Graphical representation of data literacy among post graduate student for the relevant sub sample based on types of management

**Discussion of the result**

Means scores of data literacy among post graduate students based on type of management viz, government, aided, unaided are 24.39, 24.54, and 21.37.there for data literacy based on type of management is not stasis factory to certain extent

It is evident from the table 6, the 90 th percentile of the score of the data literacy test for government, aided, un aided post graduate students are 32,33,28.this means only 10 percent of government ,aided, and unaided post graduate students lies above the score 32,33,28 and 90 percent lie below that score .

**Comparison of mean score of data literacy and its components among post graduate students based on gender ,subject of specialization ,locale of the college, type of management of the college**

 **t**-test

A **t**-test is an analysis of two population’s means through the use of statistical examination; A **t**-test with two samples is commonly used with small sample sizes, testing the difference between the samples when the variances of two normal distributions are not known. The investigator used t-test for comparison of mean score of data literacy

The third step of the analysis was to find out whether there exist any significant difference in the mean score of data literacy and its components among post graduate students in the relevant sub samples based on gender, subject of specialization, locale of the college, and type of management of the college

**Result of comparison of data literacy for each sub samples are discussed under the following headings**

* Significant difference in data literacy among post graduate students based on gender
* Significant difference in data literacy among post graduate students based on locale of the college
* Significant difference in data literacy among post graduate students based on subject of specialization
* Significant difference in data literacy among post graduate students based on type of management of the college

**Significant difference in data literacy among post graduate students based on gender**

In order to study gender difference in data literacy among post graduate students two tailed test of significant difference between the means of sub group viz, males and females are presented in the table 7

Table 7

*Test of significant difference between the mean scores of males and female post graduate students*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Gender | N | Mean | StandardDeviation | t score | Level of significance |
| Malefemale | 84516 | 21.559524.1182 | 6.582846.19674 | 3.47 | 0.01 |

**Discussion of the result**

The calculated value of ‘t’ for data literacy among post graduate students based on gender is 3.479. This means that there is a significant difference between males and females post graduate students in their data literacy.

**Significant difference in data literacy among post graduate students based** **on locale of the college**

Significant difference in data literacy among post graduate students based on locale of the college is given in table 8

Table 8

*Test of Significant difference in data literacy among post graduate students based on locale of the college*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Locale | N | mean | StandardDeviation | T score | Level of significant |
| Data literacy | UrbanRural | 384216 | 24.033923.2731 | 6.376886.17229 | 1.419 | N.S |

**NS-**Not Significant

**Discussion of the result**

The ‘t’ value for data literacy among post graduate students is based on viz., Locale of college is 1.419 as the ‘t’ value are below 1.96 the required value for significance at 0.05 level, they did not differ in their data literacy based on locale of the college. It means that rural and urban post graduate college students did not differ in their data literacy score

**Significant difference in data literacy among post graduate students based on** **type of management of the college**

Significant difference in data literacy among post graduate students based on type of management of the college is given in table 9

Table 9

*Data and result of ANOVA for the mean comparison of data literacy based on type of management of the college*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 1067.560 | 2 | 533.780 | 13.990 | .000 |
| Within Groups | 22777.880 | 597 | 38.154 |
| Total | 23845.440 | 599 |  |

**Discussion of the result**

Table 9 shows that the obtained F value for variable data literacy, the value is 13.990.these value is greater than F value 3.01 for (2,597) degrees of freedom at 0.01 level of significant. This shows that data literacy differ significantly among post graduate students from government, aided and unaided colleges

To know which are the group that differ in their data literacy among post graduate students **scheffe’s test was done as post hoc analysis**

Table 10

*Details of multiple comparison of data literacy among post graduate students based on type of management of the college*

|  |  |  |
| --- | --- | --- |
| Type of Management | N | Subset for alpha = 0.05 |
| 1 | 2 |
| Un Aided | 143 | 21.3776 |  |
| Government | 119 |  | 24.3950 |
| Aided | 338 |  | 24.5444 |
| Sig. |  | 1.000 | .976 |

**Discussion of the result**

It is obtained from the table that there exists no significant difference in government and aided colleges. We can see that there exists significant difference in aided and unaided also there exist significant difference in government and aided post graduate students in data literacy

**Significant difference in data literacy among post graduate students based on subject of specialization**

Significant difference in data literacy among post graduate students based on subject of specialization is given in the table 11

Table 11

*Data and result of ANOVA for the mean comparison of data literacy based on*subject of specialization

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 5003.568 | 3 | 1667.856 | 52.757 | .000 |
| Within Groups | 18841.872 | 596 | 31.614 |
| Total | 23845.440 | 599 |  |  |  |

**Discussion of the result**

Table 11 shows that the obtained F value for variable data literacyamong post graduate students based on subject of specialization, the value is 53.757.these value is greater than F value 2.62 for (3,596) degrees of freedom at 0.01 level of significant. This shows that data literacy differ significantly among post graduate students from subject of specialization

To know which are the group that differ in their data literacy among post graduate students **scheffe’s test** was done as post hoc analysis

**Details of multiple comparison of data literacy among post graduate students based on type of management of the college based on subject of specialization**

Details of multiple comparison of data literacy among post graduate students based on subject of specialization is given in the table 12

Table 12

*Multiple comparison of data literacy among post graduate students based on subject of specialization*

|  |  |  |
| --- | --- | --- |
| Subject | N | Subset for alpha = 0.05 |
| 1 | 2 | 3 |
| Language | 171 | 20.5965 |  |  |
| Arts | 101 | 21.6733 |  |  |
| Commerce | 130 |  | 23.7615 |  |
| Science | 198 |  |  | 27.5556 |
| Sig. |  | .463 | 1.000 | 1.000 |

**Discussion of the result**

The above table 12 shows that there exist no significant difference in the subject language and arts but there exist significant difference in the subject language and commerce. This means that commerce students have better data literacy than language students. There exists significant difference in language and science. It shows that science students have better data literacy than language students. There exist significant difference in Arts and commerce it shows that commerce students have more data literacy than arts students.Arts and science subject also have significant difference. It means that science students have more data literacy than arts students There exist significant difference in commerce and science. Science students have better data literacy than commerce students

**Conclusion**

Based on the analysis the investigator reached following conclusions Mean scores of data literacy among post graduate students is low. But the possible minimum value for the data literacy test is 8 and possible maximum value is 39.The mean score obtained for data literacy test is 23.76 which is less than neutral value (25) which means that data literacy of post graduate students are not satisfactory

* Based on gender, data literacy differs significantly. Female post graduate students have more data literacy than males. The value of’t’ for data literacy among post graduate students based on gender is 3.479. This means that there is a significant difference between males and females post graduate students in their data literacy.
* The‘t’ value based on Locale of college is 1.419.As the ‘t’ value is below 1.96, the required value for significance 0.05 level. Post graduate students do not differ in their data literacy based on locale of the college. It means that rural and urban post graduate college students didn’t differ in their data literacy
* F value for data literacy among post graduate students based on locale of the college is 13.990.As this value is greater than F value 3.01 for (2,597) degrees of freedom at 0.01 level of significant. This shows that data literacy differ significantly among post graduate students from government, aided and unaided colleges
* F value for variable data literacyamong post graduate students based on subject of specialization, the value is 53.757.As thiss value is greater than F value 2.62 for (3,596) degrees of freedom at 0.01 level of significant. This shows that data literacy differ significantly among post graduate students based on subject of specialization

**Tenability of hypothesis**

 Hypothesis state that there exists significant difference in the means scores of data literacy based on (a) gender (b) locale of the college(c) subject of specialization (d) type of management of the college

The first part of the hypothesis state that’ there exist significant difference in the means score of data literacy among male and female post graduate students’. The result shows that there is a significant difference between males and females post graduate students in their data literacy. Hence this part of the hypothesis is substantiated

The second part of the hypothesis state that’ there exist significant difference in the means score of data literacy among rural and urban post graduate college students’. The result shows that rural and urban post graduate college students do not differ in their data literacy .This means that there is no significant difference in the means score of data literacy among post graduate students. Hence this part of the hypothesis is rejected

The third part of the hypothesis state that’ there exist significant difference in the means score of data literacy based on subject of specialization of students. The result shows that data literacy differ significantly among post graduate students based on subject of specialization Hence this part of the hypothesis is substantiated

The fourth part of the hypothesis state that’ there exist significant difference in the means score of data literacy in type of management of the college. The result shows that data literacy differ significantly among post graduate students based on government, aided and unaided colleges .Hence this part of the hypothesis is also substantiated