**EXAM**

**STATISTICAL METHODS FOR THE EVALUATION OF TOURIST SERVICES**

1. **The non comparative scale and the Semantic Differential scale.**

Table 1 reports the scores in a semantic differential scale for a tourism service. Create the appropriate graphical representation for the young and adult groups, as well as for the entire sample. Moreover, provide an analysis of the results for item A1 and suggest the appropriate statistical test to compare the mean scores between the young and adult groups.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Category** | **A1** | **A2** | **A3** | **A4** | **A5** | **A6** | **A7** |
| **Young** | **Mean** | 4.3 | 5.3 | 4.5 | 4.8 | 5.15 | 5.35 | 4.9 |
| **N** | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| **Std. Deviation** | 1.418 | 1.081 | 1.318 | 0.951 | 1.137 | 1.089 | 0.968 |
| **Adult** | **Mean** | 4.89 | 4.44 | 4.44 | 4 | 4.89 | 5.44 | 4.44 |
| **N** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Std. Deviation** | 0.928 | 1.424 | 1.333 | 1.225 | 1.453 | 1.509 | 1.509 |
| **Total** | **Mean** | 4.48 | 5.03 | 4.48 | 4.55 | 5.07 | 5.38 | 4.76 |
| **N** | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| **Std. Deviation** | 1.299 | 1.239 | 1.299 | 1.088 | 1.223 | 1.208 | 1.154 |

*Table 1: results for a semantic differential*

The scale of a single item is 1-7, and the adjectives in each item are:

A1: OLD- MODERN

A2: EXPENSIVE-CHEAP

A3: UNPLEASANT-PLEASANT

A4: DIRTY-CLEAN

A5: DISREPUTABLE-REPUTABLE

A6: UNSUCCESSFUL- SUCCESSFUL

A7: WORTHLESS-VALUABLE

1. **Reliability of a test and measure to assess it.**

The table 2 reports the matrix of variance and covariance of 5 items, calculate and comment the *Cronbach's coefficient alpha.* Given that the total variance of the test is 41.375, appropriately calculate Cronbach's coefficient alpha and comment the result.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **X1** | **X2** | **X3** | **X4** | **X5** |
| **X1** | 1.767 | 2.567 | 1.867 | 0.967 | 1.067 |
| **X2** | 2.567 | 4.167 | 2.867 | 1.767 | 1.667 |
| **X3** | 1.867 | 2.867 | 2.667 | 1.067 | 1.067 |
| **X4** | 0.967 | 1.767 | 1.067 | 1.367 | 0.267 |
| **X5** | 1.067 | 1.667 | 1.067 | 0.267 | 1.067 |

*Table 2: The matrix of variance and covariance for five itmes*

1. **The PCA and the Criteria to decide the number of the components in PCA.**

The Table 3 reports the output of a PCA respect to the Eigenvalues. Using all non-common-sense criteria, determine the number of Principal Components to extract.

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Eigenvalue** | **% of variance** | **Cumulative % variance** |
| 1 | 1.600 | 20.005 | 20.005 |
| 2 | 1.424 | 17.796 | 37.801 |
| 3 | 1.159 | 14.482 | 52.283 |
| 4 | 1.098 | 13.726 | 66.009 |
| 5 | 1.009 | 12.614 | 78.623 |
| 6 | 0.700 | 8.748 | 87.371 |
| 7 | 0.516 | 6.445 | 93.817 |
| 8 | 0.495 | 6.183 | 100.000 |

*Table 3: Output of an example of PCA*

1. **Briefly illustrate the SERVQUAL conceptual framework for GAP5.**

The output of a SERVQUAL GAP5 example is reported in table 4. Please provide a detailed analysis of the results and create a graphical representation. Which statistical test would be appropriate for comparing mean perceptions and mean expectations?

|  |  |  |  |
| --- | --- | --- | --- |
| **Items** | **Mean Perception** | **Mean Expectation** | **Mean\_Gap** |
| Tangibility | 4.014 | 4.499 | -0.484 |
| Reliability | 3.992 | 4.486 | -0.494 |
| Responsiveness | 4.019 | 4.485 | -0.466 |
| Assurance | 3.985 | 4.502 | -0.517 |
| Empathy | 4.005 | 4.486 | -0.481 |

*Table 4: Output of a SERVQUAL GAP5 example.*