APPENDIX - 1

A STUDY ON BRAND PREFERENCE OF HOME APPLIANCES IN TIRUNELVELI DISTRICT

QUESTIONNAIRE

Part - I

PERSONAL DATA SHEET

(Kindly put a tick mark in the relevant Place)

1. Name : 
2. Address : 
3. Name of the city/Village : 
4. Gender : Male / Female
5. Age : Below 30 / 30-45 / Above 45
6. Educational Qualification : Up to HSS / Degree / Post Graduate / Professional
7. Occupation : Self Employed / Private Employed / Govt. Employed / Business
8. Family Size : Small Family / Large Family
9. Monthly Income of the family(Rs) : Below 19,000 / 20,000 – 40,000 / Above 40,000/-.
PART II

FACTORS INFLUENCING BRAND PREFERENCE OF CONSUMERS

Kindly rank your preference for choice of appliances

1. What are the good things you expect from different Home Appliances when you want to buy a piece for you?
   Low Budget Product [ ] New Model [ ] Beauty [ ]
   Low Power Consumption [ ] Different Shapes of Size [ ]

2. How did you arrive at the decision to buy a particular brand of Home Appliance you have?
   Liking of Husband/Wife [ ] Family Members [ ] Friends [ ]
   Advertisements [ ] Product Experiences [ ]

3. What qualities will you stress of the Home Appliance to a prospective buyer who needs your guidance?
   Performance Cost [ ] Noiseless Working [ ] Zero Maintenance [ ]
   Grand Look [ ] Easy Replaceable [ ]

Part III

For each category of home appliance, certain number of factors is given under Social dimension, Product dimension, Physical dimension, Utility dimension and Economic dimension.

Kindly rank the factors of each dimension in the order that influenced you to buy the respective home appliance.
MIXER

Give the brand name of the Mixer you have at your home ………………………………..

1. Kindly rank the factors of Social dimension who influenced you to prefer a brand you have

   Spouse   □   Children   □   Friends   □   Relatives   □
   Parents / Elders in the family □   Neighbours □   Colleagues □
   Sales Representative □

2. Rate (from 1-10) the factors of the Product dimension which induced you to purchase a brand of Mixer.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Features</td>
<td></td>
</tr>
</tbody>
</table>

3. How did you come to know the factors of Physical dimension of the product? (Rank them)

   TV Demo □   Newspaper Advertisement □
   Home Demo □   Visit to showroom □
   Dealer contact □   Incidental & Product handling □
4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Mixer? (Rank them)

- Usability
- Durability
- Usable Warranty
- Maintenance
- Moveability
- Multi usability
- Endurability
- Low power workability

5. What are the factors of **Economic dimension** that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>

**FAN**

Give the brand name of the FAN you have at your home ............................

1. Kindly rank the factors of **Social Dimension** who influenced you to prefer a brand you have.

- Spouse
- Children
- Friends
- Relatives
- Parents / Elders in the family
- Neighbours
- Colleagues
- Sales Representative
2. Rate (from 1-10) the factors of the **Product dimension** which induced you to purchase a brand of Fan.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Features</td>
<td></td>
</tr>
</tbody>
</table>

3. How did you come to know the factors of **Physical dimension** of the product? (Rank them)

- TV Demo
- Home Demo
- Dealer contact
- Newspaper Advertisement
- Visit to showroom
- Incidental & Product handling

4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Fan? (Rank your preference)

- Usability
- Maintenance
- Endurability
- Durability
- Moveability
- Low power workability
- Usable Warranty
- Multi usability
5. What are the factors of **Economic dimension** that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>

**TELEVISION**

Give the brand name of the TELEVISION you have at your home ……………………

1. Kindly rank the factors of **Social dimension** who influenced you to prefer a brand you have

   Spouse □  Children □  Friends □  Relatives □  
   Parents / Elders in the family □  Neighbours □  Colleagues □  
   Sales Representative □

2. Rate (from 1-10) the factors of the **Product dimension** which induced you to purchase a brand of Television.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
</tbody>
</table>
3. How did you come to know the factors of **Physical dimension** of the product? (Rank them)

<table>
<thead>
<tr>
<th>TV Demo</th>
<th>Newspaper Advertisement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Demo</td>
<td>Visit to showroom</td>
</tr>
<tr>
<td>Dealer contact</td>
<td>Incidental &amp; Product handling</td>
</tr>
</tbody>
</table>

4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Television? (Rank your preference)

<table>
<thead>
<tr>
<th>Usability</th>
<th>Durability</th>
<th>Usable Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>Moveability</td>
<td>Multi usability</td>
</tr>
<tr>
<td>Endurability</td>
<td>Low power workability</td>
<td></td>
</tr>
</tbody>
</table>

5. What are the factors of **Economic dimension** that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>
REFRIGERATOR

Give the brand name of the REFRIGERATOR you have at your home ………….

1. Kindly rank the factors of Social dimension who influenced you to prefer a brand you have
   Spouse   Children   Friends   Relatives
   Parents / Elders in the family   Neighbours   Colleagues
   Sales Representative

2. Rate (from 1-10) the factors of the Product dimension which induced you to purchase a brand of Refrigerator.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Features</td>
<td></td>
</tr>
</tbody>
</table>

3. How did you come to know the factors of Physical dimension of the product? (Rank them)
   TV Demo   Newspaper Advertisement
   Home Demo   Visit to showroom
   Dealer contact   Incidental & Product handling
4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Refrigerator? (Rank your preference)

<table>
<thead>
<tr>
<th>Usability</th>
<th>Durability</th>
<th>Usable Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Moveability</td>
<td>Multi usability</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endurability</td>
<td>Low power workability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. What are the factors of **Economic dimension** that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>

**WASHING MACHINE**

Give the brand name of the WASHING MACHINE you have at your home ...........

1. Kindly rank the factors of **Social dimension** who influenced you to prefer a brand you have

<table>
<thead>
<tr>
<th>Spouse</th>
<th>Children</th>
<th>Friends</th>
<th>Relatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents / Elders in the family</td>
<td>Neighbours</td>
<td>Colleagues</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Representative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Rate (from 1-10) the factors of the **Product dimension** which induced you to purchase a brand of Washing Machine.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Features</td>
<td></td>
</tr>
</tbody>
</table>

3. How did you come to know the factors of **Physical dimension** of the product? (Rank them)

- TV Demo
- Home Demo
- Dealer contact
- Newspaper Advertisement
- Visit to showroom
- Incidental & Product handling

4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Washing Machine? (Rank your preference)

- Usability
- Maintenance
- Endurability
- Durability
- Moveability
- Low power workability
- Usable Warranty
- Multi usability
5. What are the factors of **Economic dimension** that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>

**AIR CONDITIONER**

Give the brand name of the AIRCONDITIONER you have at your home ..........

1. Kindly rank the factors of **Social dimension** who influenced you to prefer a brand you have

   Spouse  [ ]  Children  [ ]  Friends  [ ]  Relatives  [ ]
   Parents / Elders in the family  [ ]  Neighbours  [ ]  Colleagues  [ ]
   Sales Representative  [ ]

2. Rate (from 1-10) the factors of the **Product dimension** which induced you to purchase a brand of Air conditioner.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mode of operation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After sales service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cost of working</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Space requirement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Availability of spares</td>
<td></td>
</tr>
</tbody>
</table>
3. How did you come to know the factors of **Physical dimension** of the product? (Rank them)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TV Demo</td>
<td>Newspaper Advertisement</td>
</tr>
<tr>
<td>Home Demo</td>
<td>Visit to showroom</td>
</tr>
<tr>
<td>Dealer contact</td>
<td>Incidental &amp; Product handling</td>
</tr>
</tbody>
</table>

4. What are the factors of **Utility dimension** that motivated you to purchase a specific brand of Air Conditioner? (Rank your preference)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Usability</td>
<td>Durability</td>
<td>Usable Warranty</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Moveability</td>
<td>Multi usability</td>
</tr>
<tr>
<td>Endurability</td>
<td>Low power workability</td>
<td></td>
</tr>
</tbody>
</table>

5. What are the factors of Economic Dimension that influenced you to buy the particular brand?

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Economic Factors</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Special discount for cash payment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Special offer in introduction period</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Easy installment facility</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0% interest facility</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gifts &amp; Compliments</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exchange offer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Discount offer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festival offer</td>
<td></td>
</tr>
</tbody>
</table>


APPENDIX -2

STATISTICAL TOOLS USED FOR ANALYSIS

APPLICATION OF KENDALL’S COEFFICIENT OF CONCORDANCE

It is used for establishing whether there is significant agreement in ranking the chosen factors under different dimensions for preferring a particular brand of Home Appliances. Kendall’s coefficient of concordance (W) is considered an appropriate measure of studying the degree of association among three or more sets of rankings. This descriptive measure of the agreement has special applications in providing a standard method of ordering objects (factors) according to consensus when we do not have an objective order of the objects (factors).

The procedure for computing and interpreting Kendall’s coefficient of concordance (W) is as follows:

a) All the objects (factors), N, should be ranked by all k judges (respondents) in the usual fashion and this information may be put in the form of a k by N matrix:

b) For each object determine the sum of ranks (R_i) assigned by all the k judges;

c) Determine \( \bar{R} \) and then obtain the value of s as under:

\[
\text{Where } s = \sum (R_j - \bar{R})^2;
\]

d) Work out the value of W using the following formula:

\[
W = \frac{s}{\frac{1}{2} k^2 (N^3 - N)}
\]

k = no. of sets of rankings i.e., the number of judges;
N = number of objects ranked;

\[ \frac{1}{12} k^2 (N^3 - N) = \text{maximum possible sum of the square deviations i.e., the sum } s \text{ which would occur with perfect agreement among } k \text{ rankings.} \]

**Illustration 1**

Seven individuals have been assigned ranks by four judges at a certain music competition as shown in the following matrix:

<table>
<thead>
<tr>
<th>Individuals</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judge 1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Judge 2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Judge 3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Judge 4</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

Is there significant agreement in ranking assigned by different judges (respondents)? Test at 5% level. Also point out the best estimate of the true rankings.

**Solution:** As there are four sets of rankings, we can work out the coefficient of concordance (W) for judging significant agreement in ranking by different judges (respondents). For this purpose we first develop the given matrix as under:

<table>
<thead>
<tr>
<th>K = 4</th>
<th>Individuals</th>
<th>( \therefore N = 7 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judge 1</td>
<td>1 3 2 5 7 4 6</td>
<td>( \therefore s = 332 )</td>
</tr>
<tr>
<td>Judge 2</td>
<td>2 4 1 3 7 5 6</td>
<td>( \therefore \Sigma R_j = 112 )</td>
</tr>
<tr>
<td>Judge 3</td>
<td>3 4 1 2 7 6 5</td>
<td></td>
</tr>
<tr>
<td>Judge 4</td>
<td>1 2 5 4 6 3 7</td>
<td></td>
</tr>
<tr>
<td>Sum of ranks (( R_j ))</td>
<td>7 13 9 14 27 18 24</td>
<td>( \therefore R_j = \frac{\Sigma R_j}{N} = \frac{112}{7} = 16 )</td>
</tr>
<tr>
<td>( (R_j - \bar{R}_j)^2 )</td>
<td>81 9 49 4 121 4 64</td>
<td>( \therefore s = 332 )</td>
</tr>
</tbody>
</table>

\[ \therefore \bar{R}_j = \frac{\Sigma R_j}{N} = \frac{112}{7} = 16 \]

\[ \therefore W = \frac{s}{\frac{1}{12} k^2 (N^3 - N)} = \frac{332}{\frac{1}{12} (4)^2 (7^3 - 7)} = \frac{332}{\frac{16}{12} (336)} = \frac{332}{448} = 0.741 \]
To judge the significance of this $W$, we look into the Table No. 9 given in appendix for finding the value of $s$ at 5% level for $k = 4$ and $N = 7$. This value is 217.0 and thus for accepting the null hypothesis ($H_0$) that $k$ sets of rankings are independent) our calculated value of $s$ should be less than 217. But the worked out value of $s$ is 332 which is higher than the table value which fact shows that $W = 0.741$ is significant. Hence, we reject the null hypothesis and infer that the judges (respondents) are applying essentially the same standard in ranking the $N$ objects i.e., there is significant agreement in ranking by different judges (respondents) at 5% level in the given case. The lower value observed amongst $R_j$ is 7 and as such the best estimate of true rankings is in the case of individual A i.e., all judges on the whole place the individual A as first in the said music competition.

Illustration 2

Given is the following information:

$k = 13$

$N = 20$

$W = 0.577$

Determine the significant of $W$ at 5% level.

Solution:

As $N$ is larger than 7, we shall workout the value of $\chi^2$ for determining $W$’s significance as under:

$\chi^2 = k (N - 1) W$ with $N - 1$ degrees of freedom

$\therefore \chi^2 = 13 (20 - 1) (0.577)$

or $\chi^2 = (247) (0.577) = 142.52$

Table value of $\chi^2$ at 5% level for $N - 1 = 20 - 1 = 19$ d.f is 30.144 but the calculated value of $\chi^2$ is 142.52 and this is considerably higher than the table value. This does not support the null hypothesis of independence and as such we can infer that $W$ is significant at 5% level.