



Measurement and Scaling

Measurement means assigning numbers and symbols to characteristics of objects according to certain pre-specified rules.

- One-to-one correspondence between numbers and the characteristics measured.
- The rules for assigning numbers are standardized and applied uniformly.
- Rules must not change over time.



Scale Characteristics

Description

By description, we mean the unique descriptors that are used to design of the scale. All scales possess de

Order

By order, we mean the relative size of the descriptors. Order is denoted by descriptors such as greater than, equal to.



Scale Characteristics

Distance

The characteristic of distance means that the absolute differences between the descriptors are known and may be in units.

Origin

The origin characteristic means that there is a unique or fixed beginning or true zero.

Primary Scales of Measurement

Scale

Fig. 8.1

Nominal

Numbers
Assigned
to Runners



Ordinal

Rank Order
of Winners



Third
place



Seco
pla

Interval

Performance
Rating on a

8.2

9.

0 to 10 Scale

15.2

14

Ratio

Time to Finish
in Seconds



Primary Scales of Measurement

Table 8.1

Scale	Basic Characteristics	Common Examples	Marketing Examples
Nominal	Numbers identify & classify objects	Social Security nos., numbering of football players	Brand nos., store types
Ordinal	Nos. indicate the relative positions of objects but not the magnitude of differences between them	Quality rankings, rankings of teams in a tournament	Preference rankings, market position, social class
Interval	Differences between objects	Temperature (Fahrenheit)	Attitudes, opinions, index
Ratio	Zero point is fixed, ratios of scale values can be compared	Length, weight	Age, sales, income, costs



Four types of scales are generated for Marketing Research.

- Nominal Scale
- Ordinal Scale
- Interval Scale
- Ratio Scale



Nominal Scale

- It consists of assignment of facts/choices to various categories which are usually exhaustive as well as mutually exclusive.
- These scales are just numerical and are the lowest level of measurement scales.
- Instances of Nominal Scale are - credit card numbers, employee id numbers etc. It is similar to a categorical scale when relationship between two variables is not quantitative.
- In a Nominal Scale numbers are no more than labels used specifically to identify different categories of data.

- Example is - a survey of retail stores done on maintaining stocks and daily turnover.
- How do you stock items at present?
 - ☐ By product category
 - ☐ At a centralized store
 - ☐ Department wise
 - ☐ Single warehouse
- Daily turnover of consumer is?
 - ☐ Between 100 – 200
 - ☐ Between 200 – 300
 - ☐ Above 300



A two way classification can be made as follows

Daily/Stock Turnover Method	Product Category	Department Cen wise	S
100 – 200			
200 – 300			
Above 300			

2.Ordinal Scale

- Ordinal scales are the simplest attitude in Marketing Research.
- It is more powerful than a nominal scale in the property of rank order.
- The ranking of certain product attributes important by the respondents is obtained through

- **Example 1:** Rank the following attributes (1 - 5), microwave oven.
- Company Name
- Functions
- Price
- Comfort
- Design
- The most important attribute is ranked 1 by the important is ranked 5. Instead of numbers, letters are used to rate in an ordinal scale. Such a scale makes the degree of favourability of different rankings



- **Example 2** - If there are 4 different types of fruit ordered on the basis of quality as Grade A, B, C, D is again an Ordinal Scale.
- **Example 3** - If there are 5 different brands of apples and respondent ranks them based on say, “Freshness”, then maximum Freshness Rank 1, the second maximum Freshness Rank 2, the third maximum Freshness Rank 3, the fourth maximum Freshness Rank 4, the fifth maximum Freshness Rank 5, an Ordinal Scale results.
- *Median* and *mode* are meaningful for ordinal data.



3.Interval Scale

- Herein the distance between the various Nominal, or numbers unlike in Ordinal, are Scales.
- The Interval Scales are also termed as Rating
- An Interval Scale has an arbitrary Zero point placed at equal intervals.
- A very good example of Interval Scale is a Th

Illustration 1 - How do you rate your present refrigerator?

Company Name	Less Known	1	2	3
Functions	Few	1	2	3
Price	Low	1	2	3
Design	Poor	1	2	3
Overall Satisfaction	Very Dis - Satisfied	1	2	3

- The data obtained from the Interval Scale can be analyzed using the following methods:
 - Mean scores of each attributes over all respondents
- The Standard Deviation (a measure of dispersion) can be calculated.



4. Ratio Scale

- It has meaningful zero point
- With this scale length, weight or distance can be measured
- In this scale, it is possible to say, how many times one object is being compared to the other.
- Eg : sales this year for product A are twice the sales of product last year.
- All statistical operations can be performed on this scale



Scaling Techniques

- **Likert Scale**
- It was developed Rensis Likert.
- Here the respondents are asked to indicate a level of agreement and disagreement with each of a series of statements.
- Each scale item has 5 response categories ranging from strongly agree and strongly disagree.



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5

Strongly agree

4

Agree

3

Indifferent

- For example quality of Mother Dairy ice-cream is a negative statement and Strongly Agree with quality is not good.
- Each degree of agreement is given a numeric value. respondents total score is computed by summing up the total score of respondent reveals the particular quality.
- Thus, likert scale is a five point scale ranging from 'strongly agreement' to 'strongly disagreement'. No judgement is made by this method.



Semantic Differential Scale

- This is a seven point scale and the end points associated with bipolar labels.

1					
Unpleasant	2	3	4	5	
Submissive					



- When Semantic Differential Scale is used to compare two images, it provides a good basis for comparing images.
- The big advantage of this scale is its simplicity compared with those of the more complex scales.
- The method is easy and fast to administer, it can detect small differences in attitude, highly versatile and valid.
- *Mean* and *median* are used for comparison to determine overall similarities and differences.



Stapel's Scale

- It was developed by Jan Stapel. This scale has the following features:-
- Each item has only one word/phrase indicating what it represents.
- Each item has ten response categories.
- Each item has an even number of categories.
- The response categories have numerical labels.

- For example, in the following items, suppose we ask respondents to rank from +5 to -5.
- Select a plus number for words which best describe cream quality accurately.
- Select a minus number for words you think do not describe cream quality accurately.
- Thus, we can select any number from +5, for words we think are very accurate, to -5, for words we think are very inaccurate.
- This scale is usually presented vertically.

- +5
+4
+3
+2
+1
High Quality
-1
-2
-3
-4
-5

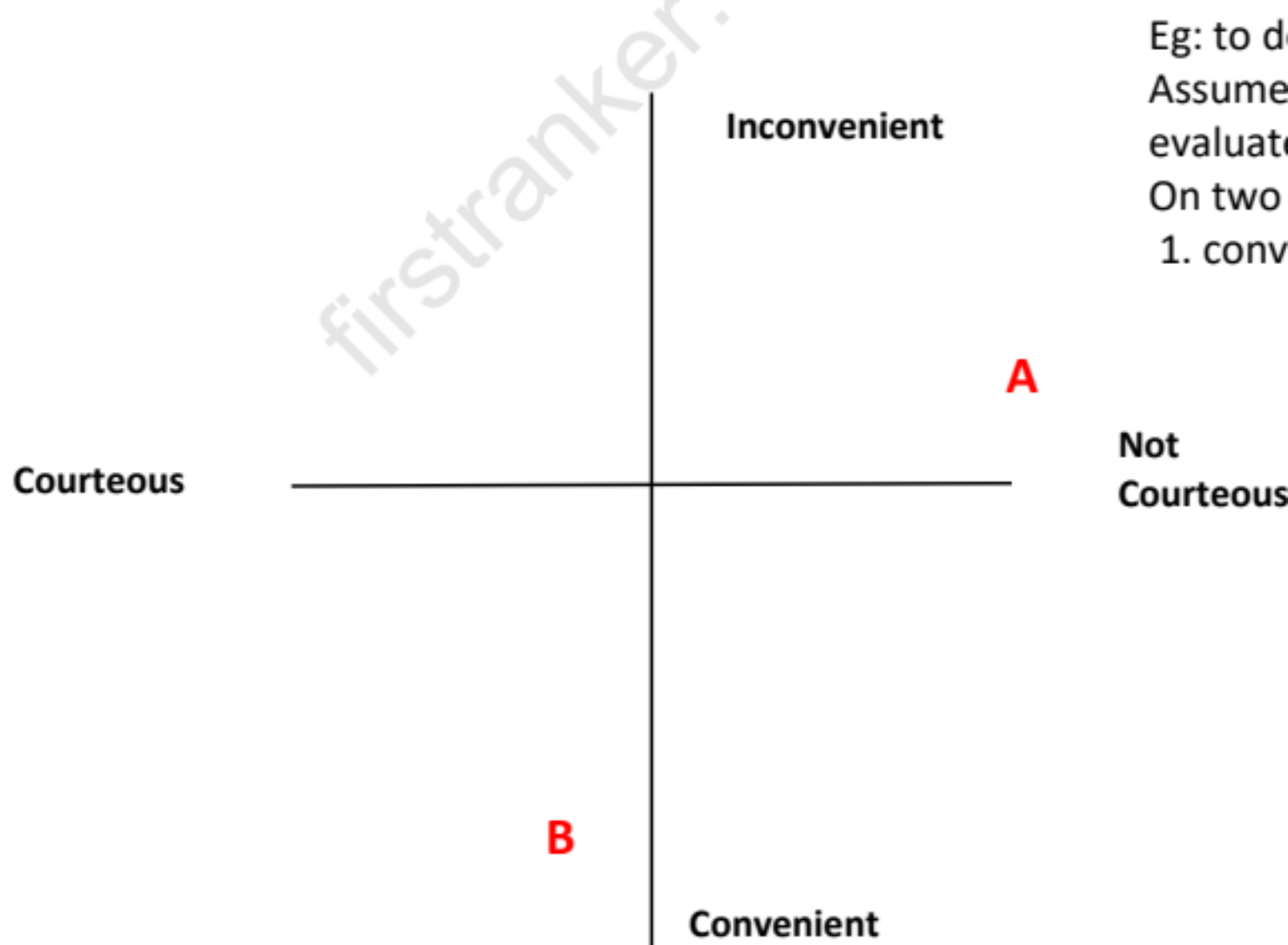
- This is a unipolar rating scale.

Multi-Dimensional Scaling (Perceptual Mapping)

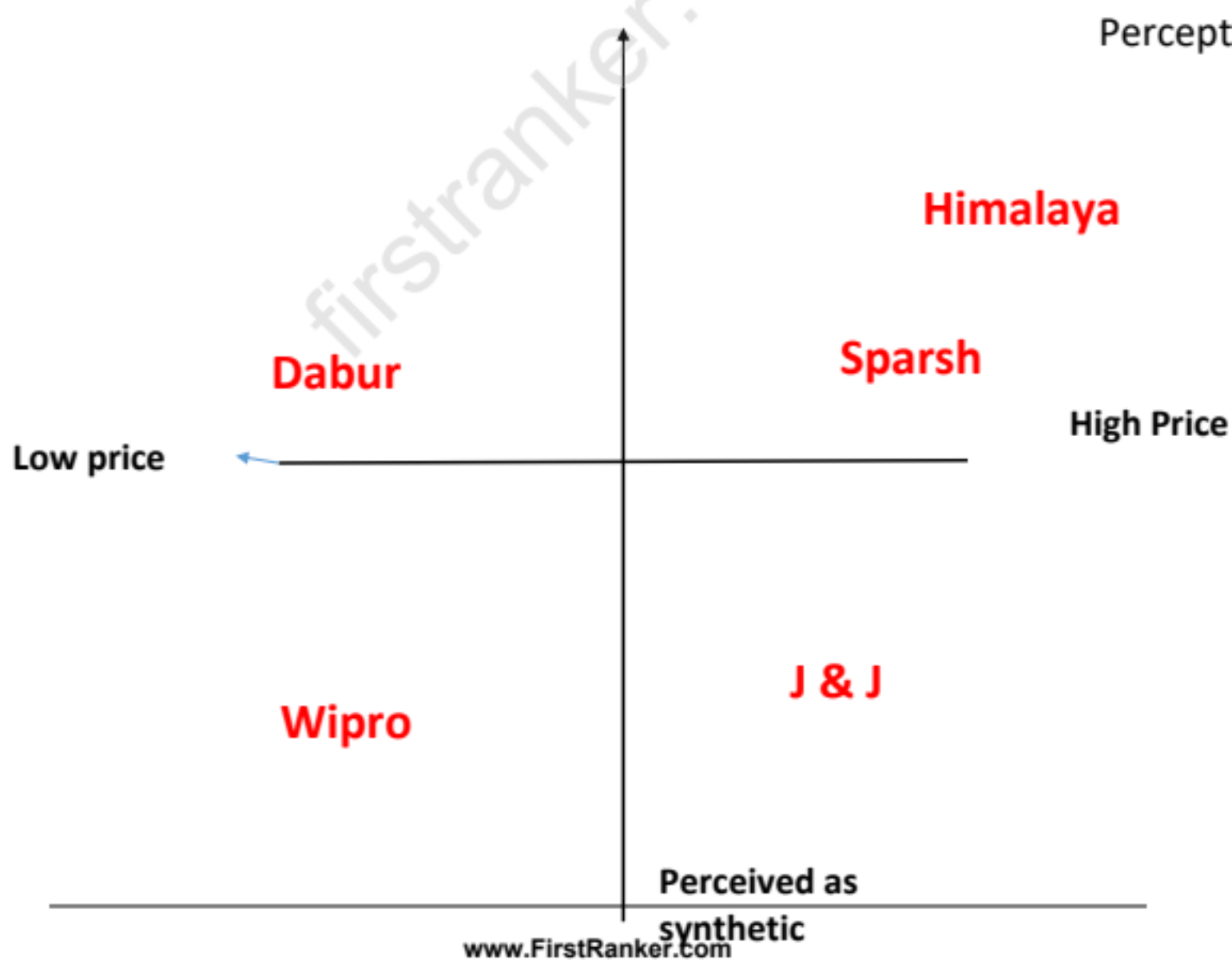
- This is used to study consumer attitudes, perceptions and preferences.
- These techniques help identify the product attributes that are most important to the customers and to measure the degree of similarity between products.
- This is used to describe similarity and preference.
- This is also known as Perceptual Mapping

- There are two ways of collecting the input data mapping.
 1. Non-attribute method
 2. Attribute method

- **Non-Attribute method**
 - Here, researcher asks the respondent to make a choice directly.
 - In this method, the criteria for comparing the objects are provided by the respondent himself
- **Attribute method**
 - In this method, instead of respondents selecting objects, the researcher provides the criteria to compare the objects based on the criteria specified



Eg: to d
Assume
evaluate
On two
1. conv





Thurston Scales

- These are also known as equal appearing interval scales.
- They are used to measure the attitude toward a construct.
- For this purpose a large number of statements are developed that relate to the concept or construct being measured.
- The judges rate these statements along an 11-point scale where each category expresses a different degree of agreement with the concept.

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Thurston Scales

- The statements are worded in such a way so that respondents can agree or disagree with them.
- The scale is then administered to assemble scores. Scores are determined by computing the mean of the items agreed with.
- A person who disagrees with all the items has a score of zero. The advantage of this scale is that it is an interval scale. However, it is the time consuming method and labour intensive.
- They are commonly used in psychology and education.



Eg: crime and violence in movie

1. All movies with crime and violence should be prohibited
2. Watching crime and violence in movies is a waste of time
3. Most movies with crime are bad and harmful.
4. The direction and theme in most crime movies are more interesting
5. Watching a movie with crime and violence does not harm our life
6. I have no opinion one way or the other, about watching crime and violence
7. I like to watch crime and violence in movie
8. Most movies with crime and violence are interesting
9. Crime movies acts as knowledge bank gained by the audience
10. People learn "how to be safe and protect oneself" by watching crime movies
- ~~11. Watching crime in a movie does not harm our life~~



Thurston Scales

8 9 10 – Favourable attitude towards crime &

1 3 4 -- Unfavourable attitude towards crime

1 5 11 - not consistent about subject

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