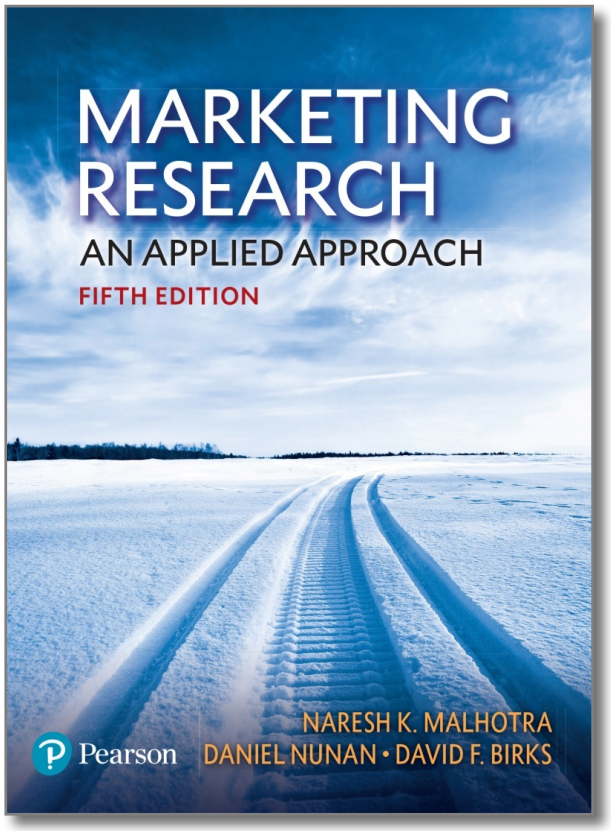
Marketing Research
An Applied Approach
5th edition



Chapter 12

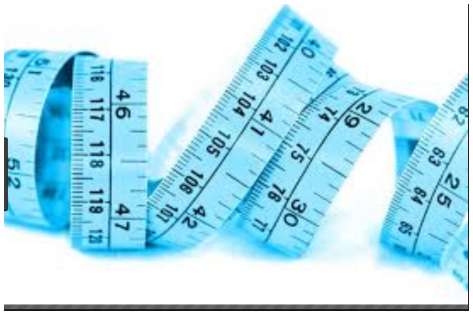
Measurement and scaling: fundamentals, comparative and non-comparative scaling

When you can measure what you are speaking about and express it in numbers, you know something about it.

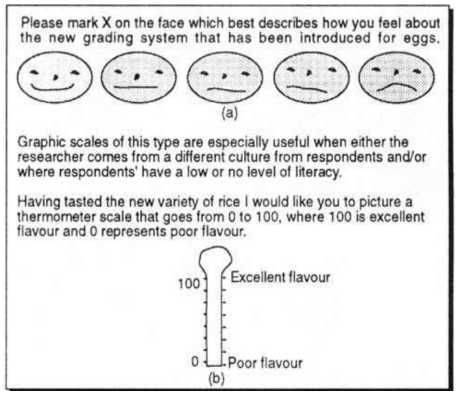
– Lord Kelvin

Chapter outline

1) Measurement and scaling
2) Scale characteristics and levels of measurement
3) Primary scales of measurement
4) A comparison of scaling techniques
5) Itemised rating scales
6) Scale evaluation
7) Choosing a scaling technique
8) Mathematically derived scales.



Measurement and scaling



- **Measurement** means assigning **numbers** or other **symbols** to characteristics of objects according to certain pre-specified rules. What we measure is not the object but some characteristics of it. An important aspect of measurement is the specification of rules for assigning numbers to characteristics.
- **Scaling** may be considered an **extension of measurement**. Scaling involves creating *continuum* upon which measured objects are located.
  - Consider a scale for locating consumers according to the characteristic attitude towards visiting a cinema. Each participant is assigned a number that is 1 to indicate an unfavorable attitude, that is 2 to indicate a neutral attitude and that is 3 to indicate a favorable attitude.
  - Scaling is the process of placing the participants on a continuum with respect to their attitude towards visiting a cinema.

Scale characteristics and levels of measurement

All the scales used in marketing research can be used in terms of four basic characteristics. These characteristics are ***description***, ***order***, ***distance*** and ***origin***.

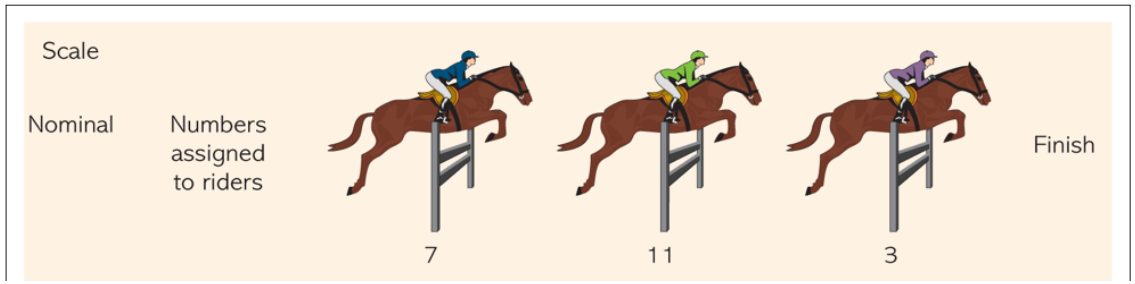
- **Description**. By description, we mean the unique labels or descriptors that are used to designate each value of the scale. An example of descriptor is 1= strongly disagree; 2= disagree; 3= neither agree nor agree; 4= agree; 5 = strongly agree.
- **Order**. By order, we mean the relative sizes or positions of the descriptors. There are no absolute values associated with order, only relative values. Order is denoted by descriptors such as "greater than", "less than" and "equal to". An example: a participant's preference for art forms can be expressed by the following order: cinema, theatre and pop concert. The preference for the cinema is greater than the preference for theatre.
- **Distance.** Absolute differences between the scale descriptors are known and may be expressed in units. *Notice that a scale that has distance also has order*.
- **Origin.** It means that the scale has a unique or fixed beginning or true zero point. An example: an exact measurement of income by a scale such as What is the annual income of your household before taxes? Euro XXX, ha a fixed origin or a true zero point.

Primary scales of measurement

A NOMINAL SCALE

- It is a scale in which the **numbers** serve only as labels or tags for *identifying* and *classifying* objects.
  - A female participant may be assigned a number 1 and a male participant 2.

A NOMINAL SCALE



- When a nominal scale is used for the **purpose of identification**, there is a strict one-to-one correspondence between the numbers and the objects. Each number is assigned to only one object and each object has only one number assigned to it.

Primary scales of measurement

A NOMINAL SCALE

- Common examples: student registration numbers at a college or university, numbers assigned to football players or jockeys in a horse race.
- In marketing research, **nominal scales** are used for identifying participants, brands, attributes, websites and other objects.
- The *numbers* in a nominal scale do not reflect the amount of the characteristics possessed by the objects. For example, a high number on a football player's shirt does not imply that the foot-baller is a better player than one with a low number.
- The only permissible operation on the numbers in a nominal scale is **counting**. Only a limited number of statistics are possible; these include *percentage* and *mode*.

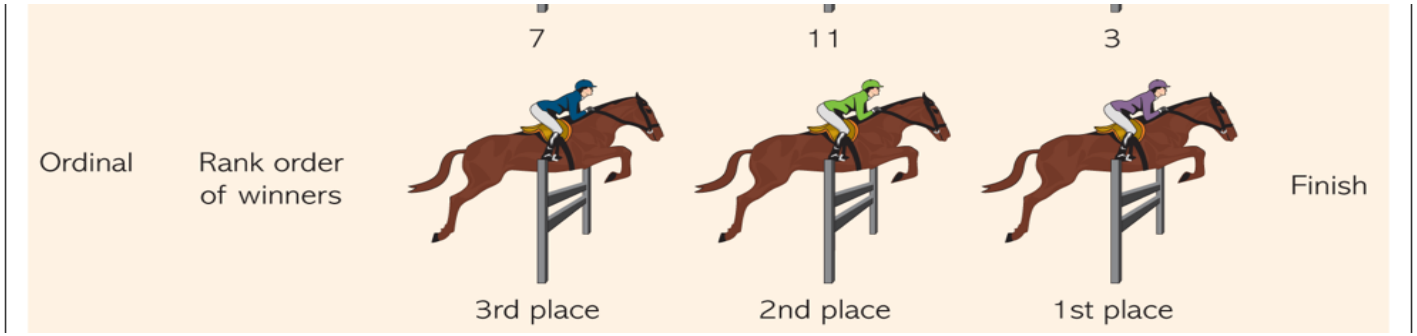
				Permissible statistics	
Scale	Basic characteristics	Common examples	Marketing example	Descriptive	Inferential
Nominal	Numbers identify and classify objects	Student registration numbers, numbers on football players' shirts	Gender classification of retail outlet types	Percentages, mode	Chi-square, binomial test

Primary scales of measurement

AN ORDINAL SCALE

- It is a ranking scale in which **numbers** are assigned to objects to indicate the relative extent to which the **objects** possess **some characteristics**.
- An ordinal scale allow you to determine whether an object has more or less of a characteristic than some other objects, but not *how much* more or less. An ordinal scale indicates relative position, not the magnitude of the differences between objects.
- Common examples of ordinal scales include quality ranking, ranking of teams in a tournament and occupational status.

A ORDINAL SCALE



Primary scales of measurement

AN ORDINAL SCALE

- In marketing research, ordinal scales are used to measure relative attitudes, opinions, perceptions and preferences.
- In an ordinal scale as in a nominal scale, equivalent objects receive the same rank.
- Ordinal scales can be transformed in any way as long as the basic ordering of the object is maintained. More specifically any monotonic positive transformation of the scale is permissible, since the differences in numbers are void of any meaning other than order.

The second ordinal scale which assigns a number 10 to Action, 25 to Comedy and 30 to Drama is an equivalent scale as it was obtained by a *monotonic positive* transformation of the first scale.

	Nominal scale	Ordinal scale		Interval scale		Ratio scale
No.	Film genre	Preference rankings		Preference ratings		Amount (€) spent on cinema visits in the past three months
				1–7	11–17	
1	Action	1	10	7	17	200
2	Animated	5	53	5	15	35
3	Comedy	2	25	7	17	200
4	Drama	3	30	6	16	100
5	Factual	4	45	6	16	0
6	Fantasy	6	61	5	15	100
7	Light drama	7	79	5	15	0
8	Romance	8	82	4	14	0
9	Sci-fi	9	95	4	14	0
10	Suspense	10	115	2	12	10

Primary scales of measurement

AN ORDINAL SCALE

- In addition to the counting operation allowable for nominal scale data, ordinal scales permit the use of statistics based on centiles. It is meaningful to calculate percentile, quartile, median, rank order correlation and other summary statistics from ordinal data.

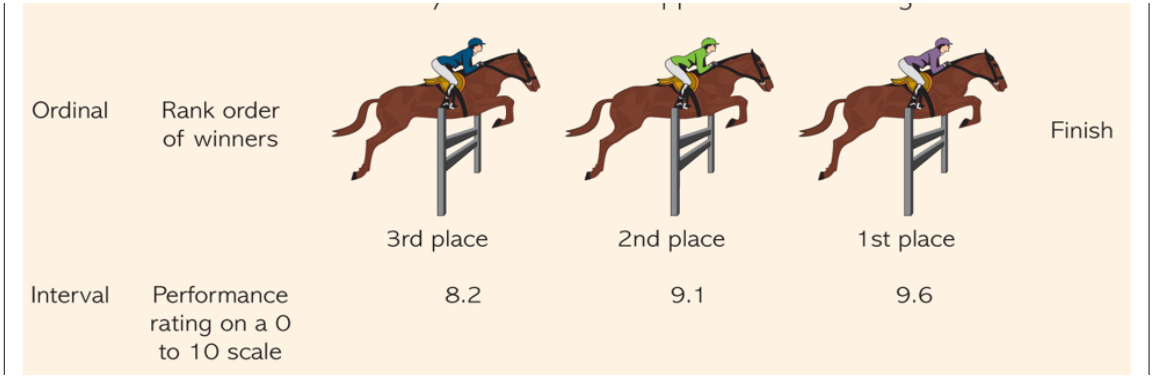
				Permissible statistics	
Scale	Basic characteristics	Common examples	Marketing example	Descriptive	Inferential
Nominal	Numbers identify and classify objects	Student registration numbers, numbers on football players' shirts	Gender classification of retail outlet types	Percentages, mode	Chi-square, binomial test
Ordinal	Numbers indicate the relative positions of the objects but not the magnitude of differences between them	Rankings of the top four teams in the football World Cup	Ranking of service quality delivered by a number of shops; rank order of favourite TV programmes	Percentile, median	Rank order correlation, Friedman, ANOVA

Primary scales of measurement

AN INTERVAL SCALE

- In an interval scale, numerically **equal distances** on the scale represent **equal values** in the characteristic being measured.

Interval Scale



Primary scales of measurement

AN INTERVAL SCALE

- An **interval scale** contains all the information of an **ordinal scale**, but it also allows you to compare the **differences between objects**.
- In marketing the interval scale is used to investigate attitudes and opinions.
- In an interval scale, the **location of the zero is not fixed**. Both the zero point and the units of measurement are arbitrary.
- Any positive linear transformation of the form $y = a+bx$ will preserve the properties of the scale. Here, x is the original scale value, y is the transformed scale value and b is a positive constant and a is any constant. Two interval scales that rate objects A,B,C, and D as 1,2,3, and 4 or as 22,24,26 and 28 are equivalent. The latter scale can be derived from the from by using a= 20 and b=2 in the transforming equation.

Primary scales of measurement

AN INTERVAL SCALE

- Statistical techniques that may be used on interval scale data include all those that can be applied to nominal and ordinal data in addition to the arithmetic mean, standard deviation, product moment correlations.

				Permissible statistics	
Scale	Basic characteristics	Common examples	Marketing example	Descriptive	Inferential
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Ordinal	Numbers indicate the relative positions of the objects but not the magnitude of differences between them	Rankings of the top four teams in the football World Cup	Ranking of service quality delivered by a number of shops; rank order of favourite TV programmes	Percentile, median	Rank order correlation, Friedman, ANOVA
Interval	Differences between objects can be compared; zero point is arbitrary	Temperature (Fahrenheit, Celsius)	Attitudes, opinions, index numbers	Range, mean, standard deviation	Product moment correlations, t tests, ANOVA, regression, factor analysis

Primary scales of measurement

RATIO SCALE

- A ratio scale possesses all the properties of the **nominal**, **ordinal** and **interval scale** and in addition an **absolute zero point**. Ratio scales possess the characteristic of origin.

Scale					
Nominal	Numbers assigned to riders	 7	 11	 3	Finish
Ordinal	Rank order of winners	 3rd place	 2nd place	 1st place	Finish
Interval	Performance rating on a 0 to 10 scale	8.2	9.1	9.6	
Ratio	Time to finish in seconds	15.2	14.1	13.4	

Primary scales of measurement

RATIO SCALE

- With ratio scales we can identify or classify objects, rank the objects and compare intervals or differences.
- Not only is the difference between 2 and 5 the same as the difference between 14 and 17, but also 14 is seven times as large as 2 in an absolute sense.
- Common examples of ratio scales include height, weight, age and money.
- In *marketing researches*, sales, costs, market share and number of customers are variables measured on a ratio scale.

Primary scales of measurement

RATIO SCALE

- All statistical techniques can be applied to ratio data. These include specialized statistics such as geometric mean, harmonic mean and coefficient of variation.

				Permissible statistics	
Scale	**Basic characteristics**	**Common examples**	**Marketing example**	**Descriptive**	**Inferential**
Nominal	Numbers identify and classify objects	Student registration numbers, numbers on football players' shirts	Gender classification of retail outlet types	Percentages, mode	Chi-square, binomial test
Ordinal	Numbers indicate the relative positions of the objects but not the magnitude of differences between them	Rankings of the top four teams in the football World Cup	Ranking of service quality delivered by a number of shops; rank order of favourite TV programmes	Percentile, median	Rank order correlation, Friedman, ANOVA
Interval	Differences between objects can be compared; zero point is arbitrary	Temperature (Fahrenheit, Celsius)	Attitudes, opinions, index numbers	Range, mean, standard deviation	Product moment correlations, t tests, ANOVA, regression, factor analysis
Ratio	Zero point is fixed; ratios of scale values can be computed	Length, weight	Age, income, costs, sales, market shares	Geometric mean, harmonic mean	Coefficient of variation

S: Comm Leisure Time Survey

Study on how UK adults spend their leisure time. One key area is devoted to cinema and the popularity of types of films.

	Nominal scale	Ordinal scale		Interval scale		Ratio scale
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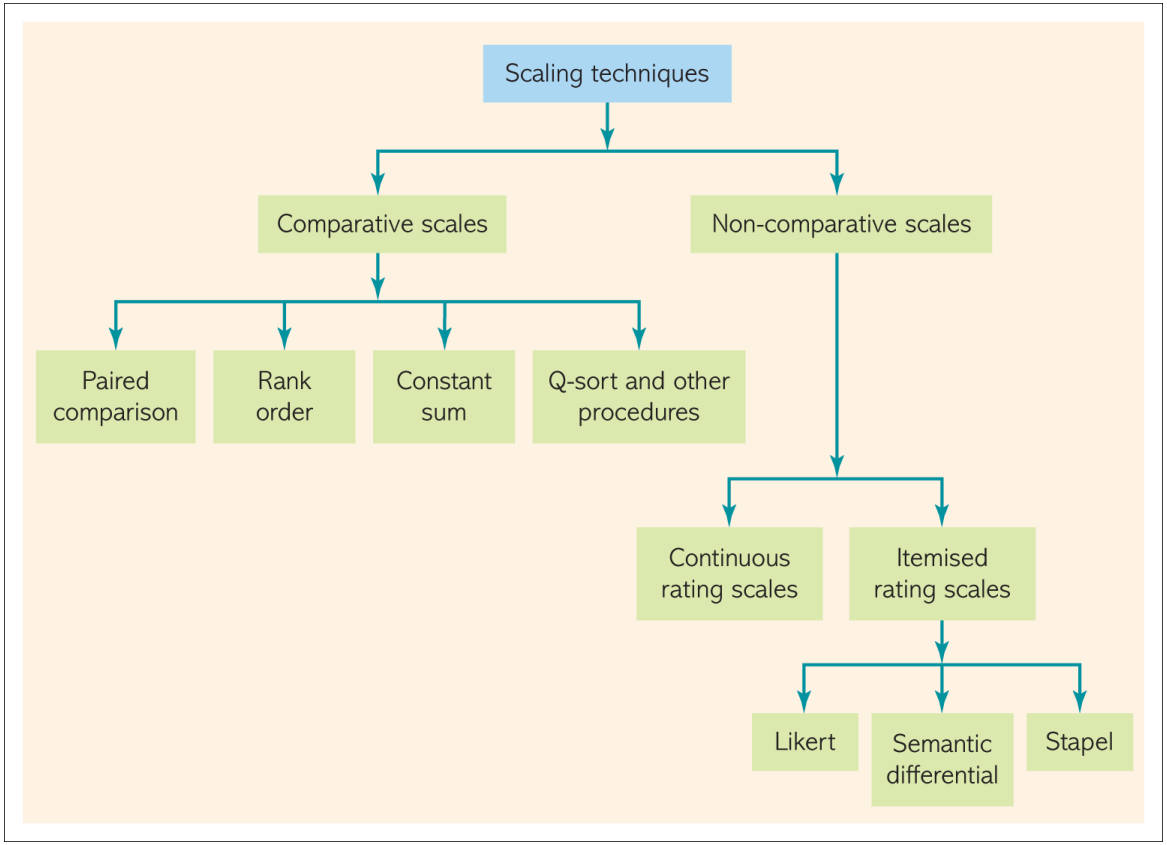
A comparison of scaling techniques

- The scaling techniques employed in marketing research can be classified into **comparative** and **non-comparative scales**.



- ***Comparative scales*** involve the direct **comparison** of stimulus objects [participants may be asked whether they prefer to visit a cinema or a theatre]
- ***Non comparative scales***: each object is **scaled** independently on the others in the **stimulus set** [Participants may be asked to evaluate on a cinema visit on a 1 to 6 preference scale (1= not at all preferred, 6= greatly preferred)]

Comparative scaling techniques - Paired comparison scaling

- **In paired comparison scaling**, a participant is presented with two objects and asked to select one according to some criterion. The data obtained are ordinal in nature.
- Participants may state that they prefer **Belgian chocolate** to Swiss, **Adidas** more than **Nike**.

The figure shows paired comparison data obtained **to assess a participant's bottled beer preferences**. The participant made 10 comparisons to evaluate five brands.

In general with n brands, [n(n-1)/2] paired comparisons include all possible pairings of objects.

Instructions
We are going to present you with 10 pairs of bottled beer brands. For each pair, please indicate which of the two brands of beer in the pair you prefer.

Recording form

	Holsten	Stella Artois	Grolsch	Carlsberg	Budvar
Holsten		0	0	1	0
Stella Artois	1[a]		0	1	0
Grolsch	1	1		1	1
Carlsberg	0	0	0		0
Budvar	1	1	0	1	
Number of times preferred[b]	3	2	0	4	1

[a] 1 in a particular box means that the brand in that column was preferred over the brand in the corresponding row. 0 means that the row brand was preferred over the column brand.

[b] The number of times a brand was preferred is obtained by summing the 1s in each column

Comparative scaling techniques - Paired comparison scaling

- **Transity of preference implies** that if *brand A* is preferred to B, and *brand B* is preferred to C, then brand A is preferred to C.
- To arrive at a rank order, the researcher determines the number of times each brand is preferred by summing the columns entries. Therefore, this participant's order preference is Carlsberg, Holsten, Stella Artois, Budvar and Grolsch.

Instructions

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Recording form

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[b] The number of times a brand was preferred is obtained by summing the 1s in each column

Comparative scaling techniques - Paired comparison scaling

- In this scaling we do not have the inclusion of a **neutral/no difference/no opinion** response.
- Paired comparing scaling is useful when the **number of brands** is **limited** since it requires **direct comparison** and overt choice.
- Other disadvantages are the **violations of the assumption of transitivity** may occur, and the order in which the objects are presented may bias the results.
- Paired comparisons bear little resemblance to the marketplace situation, which involves selection from **multiple alternatives**.
- Participants may prefer one object over certain others, but they may not like it in an absolute sense.

Comparative scaling techniques - Rank order scaling

- In rank order scaling, **participants** are presented with several objects simultaneously and asked to order or rank them according to some criterion. The data are ordinal in nature.

- **Rank order scaling** is used to measure attributes of products and services as well preferences for brands.
- Moreover, compared with paired comparisons, this type of scaling process more closely *resembles* the shopping environment.
- It also *takes less time* and eliminates intransitive responses. If there are n stimulus object, only (n-1) scaling decisions need be made in rank order scaling. In paired comparison scaling [n(n-1)/2] decisions would be required.
- The major disadvantage is that this technique produces only ordinal data.

Instructions
Rank the listed film genres in order of preference. Begin by picking out the genre that you like the most and assign it a number 1. Then find the second-most-preferred genre and assign it a number 2. Continue this procedure until you have ranked all the genres in order of preference. The least-preferred genre should be assigned a rank of 10.

No two genres should receive the same rank number

The criterion of preference is entirely up to you. There is no right or wrong answer. Just try to be consistent

Genre	Rank order
Action	
Animated	
Comedy	
Drama	
Factual	
Fantasy	
Light drama	
Romance	
Sci-fi	
Suspense	

Comparative scaling techniques - Constant sum scaling

- In constant sum scaling, participants allocate a constant sum of **units** such as points or euros, among a set of stimulus object with respect to some criterion.
    - Segment 1: importance to price
    - Segment 2: high alcohol level
    - Segment 3: hop flavours, fragrance
- Note that the constant sum also has an absolute zero; 10 points are twice as many as 5 points, and the difference between 5 and 2 points is the same as the difference between 57 and 54 points. For this reason, **constant sum scale data are sometimes treated as metric**.
- The main advantage is that it allows for fine discrimination among stimulus object without requiring too much time.
- Two main disadvantages: a) participants may allocate more or fewer units that those specified (they may allocate 108 or 94 points); b) the use of a large number of units may cause confusion and fatigue.

Instructions

Below are eight attributes of bottled beers. Please allocate 100 points among the attributes so that your allocation reflects the relative importance you attach to each attribute. The more points an attribute receives, the more important an attribute is. If an attribute is not at all important, assign it no points. If an attribute is twice as important as some other attribute, it should receive twice as many points.

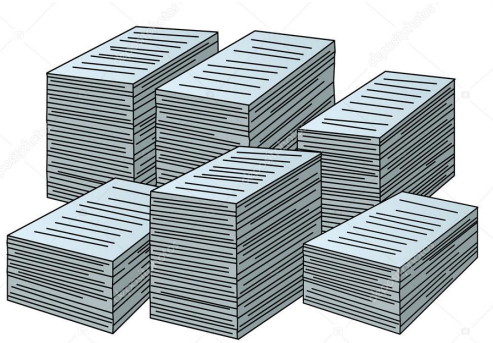
Note: the figures below represent the mean points allocated to bottled beers by three segments of a target market.

Form

	MEAN POINTS ALLOCATED			
	Attribute	**Segment I**	**Segment II**	**Segment III**
1	Bitterness	8	2	17
2	Hop flavours	2	4	20
3	Fragrance	3	9	19
4	Country where brewed	9	17	4
5	Price	53	5	7
6	High alcohol level	7	60	9
7	Aftertaste	5	0	15
8	Package design	13	3	9
	Sum	**100**	**100**	**100**

Q-sort and other procedures

- Q-sort scaling was developed to discriminate among a relatively large number of objects quickly.
- This technique uses a rank order procedure in which **objects** are sorted into **piles** based on similarity with respect to some criterion.
- For examples, participants are given 100 attitude statements on individual cards and asked to place them into 11 piles, ranging from “most highly agreed with” to “least highly agreed with”.
- The number of objects to be sorted should not be less than 60 nor more than 140; a reasonable range is 60 to 90 objects.



Magnitude estimation

- Numbers are assigned to objects such that ratios between the assigned numbers reflect ratios on the specific criterion.
- For example, participants may be asked to indicate whether they agree or disagree with each of a series of statements measuring attitude towards different film genres.
- Then they assign *a number* between *0 and 100 to each statement* to indicate the intensity of their agreement or disagreement.

Non-comparative scaling techniques

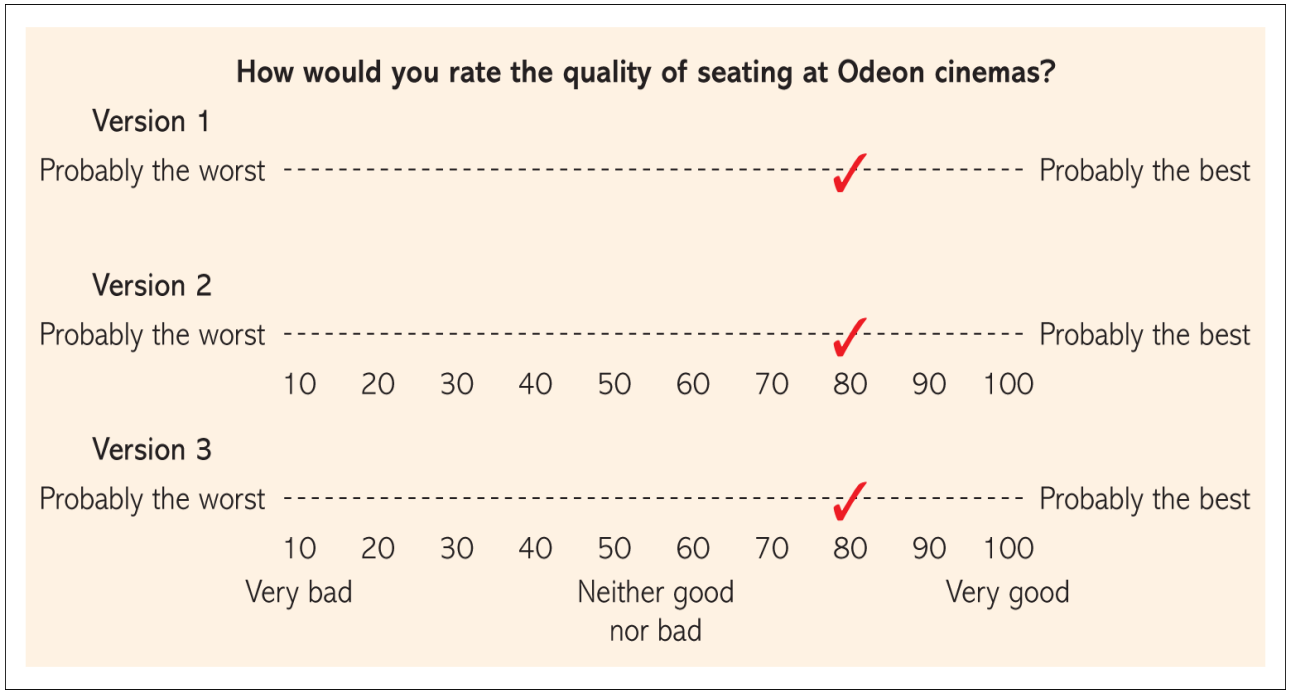
- Non-comparative scaling techniques are used whatever rating standards seem appropriate.
- The **single object** is evaluated without making comparisons.

Scale	Basic characteristics	Examples	Advantages	Disadvantages
Continuous rating scale	Place a mark on a continuous line	Reaction to TV advertisements	Easy to construct	Scoring can be cumbersome unless computerised
Itemised rating scales				
Likert scale	Degree of agreement on a 1 (strongly disagree) to 5 (strongly agree) scale	Measurement of attitudes	Easy to construct, administer and understand	More time-consuming
Semantic differential scale	Seven-point scale with bipolar labels	Brand, product and company images	Versatile	Controversy as to whether the data are interval
Stapel scale	Unipolar 10-point scale, −5 to +5, without a neutral point (zero)	Measurement of attitudes and images	Easy to construct, administered over the phone	Confusing and difficult to apply

Non-comparative scaling techniques

Continuous rating scale

- In a **continuous rating scale**, participants rate the objects by placing a mark at the appropriate position on a line that runs from one **extreme** of the criterion variable to the other.



- The line may be *vertical* or horizontal.
- Scale points may have the form of numbers of brief descriptions.
- Continuous rating scales are easy to construct but provide new little information.
- With the increase of online and *mobile device surveys*, their use is becoming more frequent.

Non-comparative scaling techniques

Itemised rating scales

- In **an itemised rating scale**, participants are provided with a scale that has a number or brief description associated with each category. The categories are ordered in terms of scale position, and the participants are required to select the specified category that best describes the object being rated.
- The most common itemised rating scales are:
  - **The Likert scale**
  - **The semantic differential scale**
  - **The Stapel scale**

Likert scales

- Likert scale is a widely used rating scale that requires the participants to indicate a degree of **agreement** or **disagreement** with each of a series of statements about the stimulus objects.

Instructions
Listed below are different beliefs about the Odeon cinema. Please indicate how strongly you agree or disagree with each by using the following scale:

1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree

	1	2	3	4	5
1 I like to visit Odeon cinemas		✓			
2 The Odeon sells poor-quality food		✓			
3 The Odeon presents a wide variety of film genres			✓		
4 I do not like Odeon advertisements				✓	
5 The Odeon charges fair prices				✓	
6 Booking a seat at the Odeon is difficult	✓				
7 The acoustics at Odeon cinemas are excellent				✓	
8 Odeon staff serve their customers very well				✓	
9 The Odeon is a great place for families to enjoy films		✓			

- Note that for a negative statement, an agreement reflects an unfavourable response, whereas for a positive statement, agreement represents a favourable response.
- In the figure the partecipant has an attitude score of 26.

Likert scales

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3 The Odeon presents a wide variety of film genres			✓		
4 I do not like Odeon advertisements				✓	
5 The Odeon charges fair prices				✓	
6 Booking a seat at the Odeon is difficult	✓				
7 The acoustics at Odeon cinemas are excellent				✓	
8 Odeon staff serve their customers very well				✓	
9 The Odeon is a great place for families to enjoy films		✓			

- The Likert scale has several advantages.
- It is easy to construct and administer and participants readily understand how to use the scale, making it suitable for online surveys, Kiosk, mobile, mail, telephone or personal interviews.
- The major disadvantage of the Likert scale is that it takes longer to complete than other itemised rating scales because participants have to read and fully reflect upon each statement.

Semantic differential scale

- The semantic differential scale is typically a seven-point rating scale with end points associated with bipolar labels that have semantic meaning.
- Participants rate objects on a number of itemised, seven-point rating scales bounded at each end by one of two bipolar adjectives such as "**boring**" and "**exciting**".

Instructions

What does visiting an Odeon cinema mean to you? The following descriptive scales, bounded at each end by bipolar adjectives, summarise characteristics of a visit. Please mark X in the blank that best indicates what a visit to an Odeon cinema means to you.

Boring						X		Exciting
Special		X						Routine
Thrifty			X					Indulgent
Cosy		X						Uncomfortable
Peaceful						X		Noisy
Youthful		X						Mature

- Means and median values on each rating scale are calculated. This helps determine the overall differences and similarities among the objects.
- It is used in comparing brand, product and company images.
- It has also been used to develop advertising and promotion strategies and in new-product development studies.

Stapel Scale

- The Stapel scale is a **unipolar rating** scale with 10 categories numbered from -5 to +5 without a neutral point (zero). **This scale is usually presented vertically**. Participants are asked to indicate by selecting an appropriate numerical response category, how accurately or inaccurately each term describes the object.

Instructions

Please evaluate how accurately each phrase describes a visit to an Odeon cinema. Select a positive number for the phrases you think describe a visit accurately. The more accurately you think the phrase describes a visit, the larger the positive number you should choose. You should select a minus number if you do not think the phrase accurately describes a visit. The less accurately you think it describes a visit, the larger the negative number you should choose. You can select any number from +5 for phrases you think are very accurate, to –5 for phrases you think are very inaccurate.

A visit to an Odeon cinema

	+5	+5
	+4	+4
	+3	+3
	+2	+2 ✗
	+1	+1
A special event		Full of energy
	–1	–1
	–2 ✗	–2
	–3	–3
	–4	–4
	–5	–5

- The Stapel scale produces results similar to the *semantic differential*.
- Some researchers believe that the Stapel scale is confusing and difficult to apply.
- Of the three itemised rating scales considered, the Stapel scale is used least.

Itemised rating scale decisions

The researcher must make six major decisions when constructing any of these scales:

- The number of scale categories to use
- Balanced versus unbalanced scale
- Odd or even number of categories
- Forced versus non-forced choice
- The nature and degree of the verbal description
- The physical form of the scale

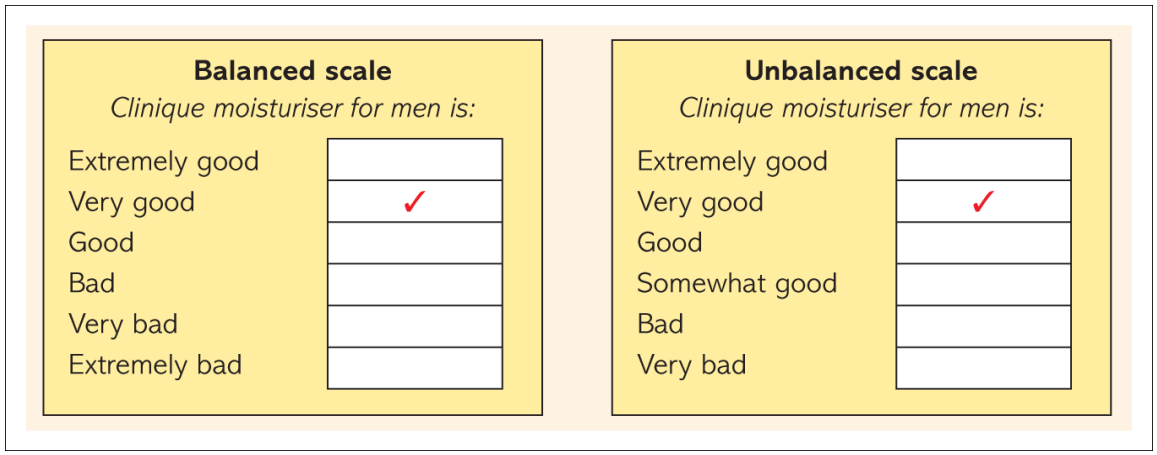
Itemised rating scale decisions

Number of scale categories

- Traditional guidelines suggest that the *appropriate number of categories* should be between **five** and **nine**.
- If the participants are interested in the scaling task and are knowledgeable about the objects, many categories may be employed.
- If the participants are not very knowledgeable or engaged with the task, fewer categories should be used.

Balanced versus unbalanced scale

In a balanced scale, the number of favourable and unfavourable categories is equal; in an unbalanced scale, the categories are unequal.



Balanced scale

Clinique moisturiser for men is:

Extremely good	
Very good	✓
Good	
Bad	
Very bad	
Extremely bad	

Unbalanced scale

Clinique moisturiser for men is:

Extremely good	
Very good	✓
Good	
Somewhat good	
Bad	
Very bad	

In order to obtain the most **objective data**, the scale should be balanced.
If the distribution of responses is likely to be skewed (either positively or negatively) an unbalanced scale with more categories in the direction of skewness may be appropriate.

Itemised rating scale decisions

Odd or even number of categories

- With an odd number of categories, the middle scale position is generally designated as neutral.
- If a neutral or indifferent response is possible from at least some of the participants, an odd number of categories should be used.
- If, on the other hand, the researcher wants to force a response or believes that no neutral or indifferent response exists, a rating scale with an even number of categories should be used.

Forced versus non-forced choice

- On forced rating scales the participants are forces to express an opinion because a “no opinion” option is not provided. In such a case, participants without an opinion may mark the middle scale position.
- If an important portion of the participants do not have opinions on the topic, marking the middle position will distort measures of central tendency and variance.
- In situations where the participants are expected to have no opinion, as opposed to simply being reluctant to disclose it, the accuracy of data may be improved by a non-forced scale that includes a “no opinion” category.

Itemised rating scale decisions

Nature and degree of verbal description

- Scale categories may have verbal, numerical or pictorial descriptions.
- The researcher must decide whether to label every scale category, label only some scale categories or label only extreme scale categories.
- Providing a verbal description for each category may not improve the accuracy or reliability of the data.
- The strength of the adjectives used to anchor the scale may influence *the distribution* of the response. With strong anchors (1= completely disagree; 7= completely agree) participants are less likely to use the extreme scale categories. Week anchors (1= generally disagree; 7=generally agree) produce uniform or flat distribution.

Itemised rating scale decisions

Physical form of the scale

Number of options are available with respect to scale form and configuration.
Scales can be presented vertically or horizontally.

A variety of scale configurations may be employed to measure the gentleness of *Clinique Face Scrub for Men*.

Some examples include:

Clinique Face Scrub for Men is:

1 Very harsh ___ ___ ___ ___ ___ ___ ___ Very gentle

2 Very harsh 1 2 3 4 5 6 7 Very gentle

3
- Very harsh
- Neither harsh nor gentle
- Very gentle

4

Very harsh	Harsh	Somewhat harsh	Neither harsh nor gentle	Somewhat gentle	Gentle	Very gentle

5

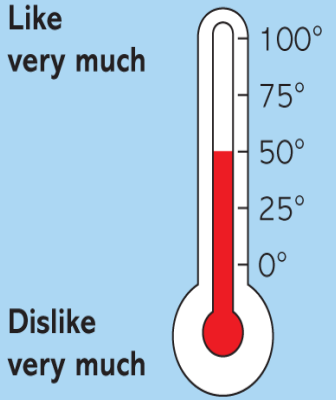
–3	–2	–1	0+	1+	2+	3
Very harsh			Neither harsh nor gentle			Very gentle

Thermometer scale

Instructions

Please indicate how much you like McDonald's 'Big Mac' by colouring in the thermometer with your red pen. Start at the bottom and colour up to the temperature that shows how much you prefer McDonald's 'Big Mac'.

Form



Itemised rating scale decisions

Physical form of the scale

Number of options are available with respect to scale form and configuration. Scales can be presented vertically or horizontally.

Smiling face scale

Instructions

Please tell me how much you like the Barbie Doll by pointing to the face that best shows how much you like it. If you did not like the Barbie Doll at all, you would point to Face 1. If you liked it very much, you would point to Face 5. Now tell me, how much did you like the Barbie Doll?

Form

1 Number of categories	Although there is no single, optimal number, traditional guidelines suggest that there should be between five and nine categories
2 Balanced versus unbalanced	In general, the scale should be balanced to obtain the most objective data
3 Odd or even number of categories	If a neutral or indifferent scale response is possible from at least some of the participants, an odd number of categories should be used
4 Forced versus unforced	In situations where the participants are expected to have no opinion, the accuracy of the data may be improved by a non-forced scale
5 Verbal description	An argument can be made for labelling all or many scale categories. The category descriptions should be located as close to the response categories as possible
6 Physical form	A number of options should be tried and the best one selected

Some commonly used scales in marketing

Construct	Scale descriptors				
Attitude	Very bad	Bad	Neither bad nor good	Good	Very good
Importance	Not at all important	Not important	Neutral	Important	Very important
Satisfaction	Very dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very satisfied
Purchase intent	Definitely will not buy	Probably will not buy	Might or might not buy	Probably will buy	Definitely will buy
Purchase frequency	Never	Rarely	Sometimes	Often	Very often

Evaluation of the scale

To evaluate the mesasurment accuracy, we can use the *true score model*: $X_0 = X_T + X_S + X_R$

- X_0 = The observed score or measurement
- X_T = the true score of the characteristic
- X_S = systematic error (mechanical factors)
- X_R = random error (situational factors)

Reliability can be defined as the extent to which measures are free from random error, X_R. If $X_R = 0$, the measure is perfectly reliable.

Perfect **validity** requires that there be no measurement error ($X_O = X_T$, $X_R = 0$, $X_S = 0$).

1	Other relatively stable characteristics of the individual that influence the test score, such as intelligence, social desirability and education
2	Short-term or transient personal factors, such as health, emotions and fatigue
3	Situational factors, such as the presence of other people, noise and distractions
4	Sampling of items included in the scale: addition, deletion or changes in the scale items
5	Lack of clarity of the scale, including the instructions or the items themselves
6	Mechanical factors, such as poor printing, overcrowding items in the questionnaire and poor design
7	Administration of the scale, such as differences among interviewers
8	Analysis factors, such as differences in scoring and statistical analysis