**Chapter 3: Measurement to Build Marketing Insights**

**Multiple Choice**

1. Ranking questions generally produces \_\_\_\_\_\_\_\_\_\_\_ level of measurement.

a. nominal

b. ordinal

c. interval

d. ratio

e. none of these

Answer: b

1. An example of nominal scale data would be which of the following?

a. preference data

b. index numbers

c. sex of the respondent

d. unit sales

e. none of these

Answer: c

1. Quality grades such as “good,” “better,” and “best” represent which of the following levels of measurement?

a. nominal

b. ordinal

c. interval

d. ratio

e. metric

Answer: b

1. When few differences in scores are found between the first and second administration of a test, the test is said to have \_\_\_\_\_\_\_\_\_.

a. validity

b. stability

c. sensitivity

d. reliability

e. All of the above

Answer: b

1. The *Cronbach alpha technique* gives researchers an idea of a scale’s \_\_\_\_\_\_\_\_\_\_.

a. validity

b. reliability

c. sensitivity

d. content

e. None of the above

Answer: b

1. A bathroom scale that gives you a different weight every time you step on suffers from poor:

a. face validity

b. construct validity

c. split-half validity

d. reliability

e. random-half validity

Answer: d

1. Which is the weakest form of validity?

a. content

b. face

c. construct

d. criterion related

e. none of these

Answer: b

1. If a restaurant customer satisfaction questionnaire lacked a question concerning the quality of the food being served, we’d say the questionnaire lacked\_\_\_\_\_\_ validity.

a. content

b. face

c. construct

d. criterion-related

e. none of these

Answer: a

1. Which step(s) in the measurement process must be completed before evaluating the reliability and validity of the scale?

a. Identify the concept of interest.

b. Develop a construct.

c. Develop an operational definition.

d. Create a measurement scale.

e. All of these

Answer: e

1. Before a measurement scale can be shown to be valid, it must be \_\_\_\_\_\_\_.

a. stable

b. reliable

c. consistent

d. convergent

e. All of these

Answer: b

1. When a researcher describes how a construct will be measured, this is referred to as what type of definition?

a. constitutive

b. theoretical

c. conceptual

d. operational

Answer: d

1. Brand loyalty has been defined as “A strongly motivated and long standing decision to purchase a particular product or service.” This is an example of which type of definition?

a. constitutive

b. operational

c. reliable

d. valid

Answer: a

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a guide, a method, or a command that tells a research what to do.

a. Construct

b. Rule

c. Operational definition

d. Valid concept

e. Reliable concept

Answer: b

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ specifies which observable characteristics will be measured and the process for assigning a value to the concept.

a. Operational definition

b. Constitutive definition

c. Concept

d. Rule

e. Valid concept

Answer: a

1. If the same instrument gives consistent results every time it is used for a measurement, then it indicates:

a. test-retest reliability.

b. equivalent-forms reliability.

c. internal consistency.

d. internal validity.

e. external validity.

Answer: a

1. Which of the following does not apply to an operational definition?

a. There can be many different potential operational definitions for a single concept.

b. It defines which observable characteristics will be measured.

c. It defines a concept and establishes boundaries for the concept.

d. Instruments are developed on the basis of it.

e. All of these pertain to an operational definition.

Answer: c

1. When a researcher wants to show the differences separating two objects, the ideal type of scale to use is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. nominal

b. ordinal

c. interval

d. None of these

Answer: c

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reveals the lack of or low correlation among constructs that are supposed to be different.

a. Predictive validity

b. Predictive reliability

c. Concurrent validity

d. Convergent validity

e. Discriminant validity

Answer: e

1. If the researcher wishes to measure something that could have a value of zero, what would be the appropriate type of scale?

a. ordinal

b. qualitative

c. nominal

d. ratio

e. none of these

Answer: d

1. This level of measurement would have the fewest possibilities regarding the types of statistical techniques that can be applied to its data.

a. nominal

b. ratio

c. interval

d. reliable

e. ordinal

Answer: a

1. What level of measurement would the following question produce?  
     
   Please indicate the environmental surroundings in which you live using the following choices:  
   (1) urban  
   (2) rural  
   (3) suburban

a. nominal

b. ratio

c. interval

d. reliable

e. ordinal

Answer: a

1. What level of measurement would the following question produce?  
     
   Please indicate your approximate age by checking the appropriate age category.  
   \_\_\_(1) 0 to 18  
   \_\_\_(2) 19 to 34  
   \_\_\_(3) 35 and over

a. nominal

b. ratio

c. interval

d. reliable

e. ordinal

Answer: e

1. In marketing research, this level of measurement is the preferred measure when measuring purchase likelihood and attitude assessment.

a. nominal

b. absolute

c. interval

d. reliable

e. ordinal

Answer: c

1. Which of the following types of scales would allow the researcher to compute arithmetic means?

a. nominal

b. ordinal

c. ratio

d. interval

e. both ratio and interval

Answer: e

1. You are creating a survey that is interested in ranking customers’ preferences for various brands of cola. You would definitely need to use which type of scale?

a. nominal

b. ordinal

c. ratio

d. interval

e. none of these

Answer: b

1. The measurement process begins with \_\_\_\_\_\_\_\_\_\_\_\_.

a. Identifying the concept of interest

b. Developing a construct

c. Defining the construct

d. Evaluating reliability and validity

e. Developing a measurement scale

Answer: a

1. \_\_\_\_\_\_\_\_\_\_\_\_ are specific types of concepts that exist at higher levels of abstraction than do every day concepts.

a. Abstract Concepts

b. Constructs

c. Intuitive Constructs

d. None of these

Answer: b

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are/can be a source of measurement differences that produces random or systematic error.

a. Characteristics of individual respondents

b. Short-term personal factors

c. Situational Factors

d. Sampling of items included in the questionnaire

e. All of these

Answer: e

1. Which of the following is not a way to assess reliability?

a. test-retest reliability

b. equivalent form reliability

c. internal consistency reliability

d. spilt-half technique

e. criterion- related reliability

Answer: e

1. This scale offer respondents a graphic continuum, typically anchored by two extremes.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: a

1. This scale is similar to graphic rating scales, except that respondents must select from a limited number of ordered categories rather than placing a mark on a continuous scale.

a. Modified graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: b

1. Measurement scales in which the respondent compares two or more items and ranks them.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: c

1. Measurement scales in which judgment is made without reference to another object, concept, or person.

a. Noncomparative scale

b. Comparative scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: a

1. Measurement scales in which one object, concept, or person is compared with another on a scale.

a. Noncomparative scale

b. Comparative scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: b

1. Measurement scales that ask the respondent to pick one of the two objects in a set, based on some stated criteria.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Paired comparison scale

Answer: e

1. Measurement scales that ask the respondent to divide a given number of points, typically 100, among two or more attributes, based on their importance to him or her.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: d

1. Measurement scales that examine the strengths and weaknesses of a concept by having the respondent rank it between dichotomous pairs of words or phrases that could be used to describe it; the means of the responses are then plotted as a profile or image.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Semantic differential scale

Answer: e

1. Rank-order scales generate what type of data?

a. Nominal

b. Ordinal

c. Interval

d. Ratio

e. Categorical

Answer: b

1. Most researchers feel that \_\_\_\_\_ items is the upper limit on a constant sum scale.

a. Five

b. Seven

c. Ten

d. Twelve

e. Fifteen

Answer: c

1. Measurement scales that require the respondent to rate, on a scale ranging from +5 to −5, how closely and in what direction a descriptor adjective fits a given concept.

a. Graphical rating scale

b. Itemized rating scale

c. Rank-ordered scale

d. Constant sum scale

e. Stapel scale

Answer: e

1. Measurement scales in which the respondent specifies a level of agreement or disagreement with statements expressing either a favorable or an unfavorable attitude toward the concept under study.

a. Graphical rating scale

b. Likert scale

c. Rank-ordered scale

d. Constant sum scale

e. Stapel scale

Answer: b

1. Scale used to measure a respondent’s intention to buy or not buy a product.

a. Purchase-intent scale

b. Likert scale

c. Rank-ordered scale

d. Constant sum scale

e. Stapel scale

Answer: a

1. \_\_\_\_\_ studies simply follow changes in consumers’ attitudes and purchase behavior over time.

a. Purchase-plan

b. Intent to buy

c. Tracking

d. Indifference

e. Buy-no buy

Answer: c

1. A measure of satisfaction; the percentage of promoters minus the percentage of detractors when answering the question, “Would you recommend this to a friend?”

a. Satisfaction score

b. Value score

c. Intent score

d. Net promoter score

e. None of these

Answer: d

**True/False**

1. A constitutive definition is similar to a dictionary definition.

Answer: True

1. If a questionnaire contains questions which were poorly worded, then the questionnaire could have a serious “reliability” problem.

Answer: True

1. A questionnaire could be reliable without being valid.

Answer: True

1. A questionnaire could be valid without being reliable.

Answer: False

1. A nominal scale provides the researcher with metric data.

Answer: False

1. An ordinal scale can be used when the researcher is interested in knowing which brand a consumer prefers in a product category.

Answer: True

1. Marketers sometimes measure constructs that do not have a true zero point.

Answer: True

1. Marketers are typically interested in measuring observable constructs.

Answer: False

1. Interval scales are preferable to ordinal scales when the researcher wants to know the magnitude of differences between two brands.

Answer: True

1. Construct equivalence deals with how people see, understand, and develop measurements of a particular phenomenon.

Answer: True

1. A construct should be measured before it is defined.

Answer: False

1. A problem often encountered with rules is a lack of clarity or specificity.

Answer: True

1. Physical characteristics of a respondent such as age, weight, & height are not examples of ratio-scaled variables.

Answer: False

1. Equivalent form reliability is the ability of two very different forms of an instrument to produce closely correlated results.

Answer: False

1. The split-half technique is a method of assessing the reliability of a scale by dividing the total set of measurement items in half and correlating the results.

Answer: True

1. Some things are easier to measure because its rules are easier to create and follow.

Answer: True

1. Constructs hinder researchers by integrating the complex phenomena found in the marketing environment.

Answer: False

1. An operational definition serves as a bridge between a theoretical concept and real-world events or factors.

Answer: True

1. A nominal scale partitions data into categories that are mutually exclusive and collectively exhaustive.

Answer: True

1. Ordinal scales help determine equality or inequality.

Answer: False

1. Accuracy equals measurement plus errors.

Answer: False

1. Content validity answers the question: does the scale provide adequate coverage of the topic under study?

Answer: True

1. The term scaling refers to procedures for measuring concepts like income, age, and height that have instruments that can be used for their measurement.

Answer: False

1. Unidimensional scales are designed to measure one or more attribute of a concept, respondent, or object.

Answer: False

1. Measurement of attitudes relies on more precise scales than those found in the physical sciences.

Answer: False

1. Responses to graphic rating scales are limited to simply placing a mark on a continuum and this is why the scale works so well.

Answer: False

1. Graphic ratings scales are also sometimes called “sliders” when used in online and mobile surveys.

Answer: True

1. Itemized rating scales allow for the fine distinctions.

Answer: False

1. Due to its many drawbacks, the Likert scale is not very popular.

Answer: False

1. The net promoter score has values between -1 and +1.

Answer: False

1. Measurement scales that have the same number of positive and negative categories is called a balanced scale.

Answer: True

**Essay Questions**

1. Revise the following assessment of customer satisfaction for Jim Dandy’s Hamburger Joint so that content validity is achieved.

Please indicate your satisfaction with Jim Dandy’s Hamburger Joint using a scale of 1=very satisfied, 2=somewhat satisfied, and 3=not satisfied.

\_\_\_\_a. location of the restaurant

\_\_\_\_b. cleanliness of restrooms

\_\_\_\_c. friendliness of staff

\_\_\_\_d. speed of service

\_\_\_\_e. restaurant cleanliness

\_\_\_\_f. availability of condiments

\_\_\_\_g. efficiency of drive-up window

\_\_\_\_h. hours of operation

Answer: All of the attributes above are important to the assessment of satisfaction at Jim Dandy’s. However, there is one serious violation of content validity: there is no assessment of food quality.

1. Revise the following questions so as to achieve interval scale data.  
     
   (1) How satisfied are you with your present car?  
   1=very satisfied 2=somewhat satisfied 3=not satisfied

Answer: Even though this is the chapter before the chapter involving attitude scales, the student should understand that in order for a scale to achieve interval scale measurement it either needs to be “balanced” or bipolar adjectives have to be “equally opposite.” A “balanced” scale is one in which the response labels above each scale point are verbally consistent and equal in number of responses as below:

Very Bad/Somewhat Bad/Neutral/Somewhat Good/Very Good

The “neutral” point is not necessary for a balanced scale in the example above. Having bipolar adjectives that are “equally opposite” can be illustrated below:

Bad \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Good

Black \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ White

Convenient \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Inconvenient

The number of scale points should be between 3 and 9. Given a scale that is balanced or one with equally opposite bipolar adjectives, the resulting data will be interval scale.

1. Ratio and interval scale data can both produce data in which arithmetic means and metric measures of dispersion can be computed. However, there are several important differences in these two levels of measurement. What are they?

Answer: The two main differences in ratio and interval scale data are: 1) “0” for a ratio measurement is an absolute zero, such as the number of motorcycles owned by nuns; but the “0” point on an interval scale is not absolute but arbitrary, and indicates merely a number for a scale point. 2) Given the absolute “0” requirement for ratio measurement, ratios can be computed for the resulting data, such as if Jim spends 20% of his time studying and Bob only 10% then we can say Jim spends twice as much time studying as Bob. However, ratios cannot be computed for response points on interval scales because there is no absolute zero point.

1. Define validity. Then provide an example of face validity and an example of a question that has a face validity problem. Then illustrate a portion of a questionnaire with a Content Validity problem.

Answer: Validity is the degree to which what the researcher is trying to measure is actually measured, such as the extent to which a question or series of questions in a questionnaire actually measure a concept. Face Validity is the degree to which a measure seems to measure what it is supposed to measure. An example would be as follows:

A question asking college students to respond to an age category question when the target market is defined as traditional college age students.

Question: Please indicate your age by marketing the appropriate blank below:

\_\_\_\_\_0-18 \_\_\_\_\_19-34 \_\_\_\_\_35-54 \_\_\_\_55 and over

The categories above would not be appropriate for traditional college ages students and therefore would not adequately measure a population consisting of college students. A better scale would be as follows:

\_\_\_\_\_0-18 \_\_\_\_\_19-21 \_\_\_\_\_22-25 \_\_\_\_26 and over

Content validity has to do with how well the content of the questions represents the concept being measured. An example would be for a restaurant customer satisfaction study: Please indicate your level of satisfaction with XYZ restaurant for each of the following using the following scale:

Very Somewhat Somewhat Very  
Dissatisfied Dissatisfied Satisfied Satisfied  
 \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_  
1 2 3 4

Location \_\_\_\_ Cleanliness\_\_\_\_ Parking\_\_\_\_ Service\_\_\_\_

The above 4 attributes are certainly important, but do not adequately measure the concept of satisfaction for a restaurant, thereby not achieving content validity for satisfaction construct. One obvious omission in the above list is food quality. Price would be another important omitted variable.

1. Give an example of a scale that would be reliable but not valid. Also give an example of a scale that would be reliable but not valid. Also give an example of a scale that would be valid but not reliable.

Answer: An example of an answer would be if we were trying to measure customer satisfaction, but the questionnaire consistently measured customer loyalty, the scale would be reliable in that it measured the construct consistently. However, it would not be valid, because it did not measure what was intended. If a questionnaire measures customer service accurately, but the results are significantly different when the survey is repeated a week later, it is not reliable.

1. What are the strengths of the semantic differential scale?

Answer: The semantic differential has been shown to be sufficiently reliable and valid for decision making and prediction in marketing and the behavioral sciences.6 Also, the semantic differential has proved to be statistically robust (generalizable from one group of subjects to another) when applied to corporate image research.7 This makes possible the measurement and comparison of images held by interviewees with diverse backgrounds.

1. What are the weaknesses of the semantic differential scale?

Answer: First, the semantic differential suffers from a lack of standardization. It is a highly generalized technique that must be adapted for each research problem. There is no single set of standard scales; hence, the development of customized scales becomes an integral part of the research.

The number of divisions on the semantic differential scale also presents a problem. If too few divisions are used, the scale is crude and lacks meaning; if too many are used, the scale goes beyond the ability of most people to discriminate. Another disadvantage of the semantic differential is the halo effect.

1. What is the halo effect?

Answer: The rating of a specific image component may be dominated by the interviewee’s overall impression of the concept being rated.

1. What are the advantages of the net promoter score?

Answer: It is simple; just a single question. The result is easy to understand. For example, if a researcher tells management that the firm’s customer loyalty index is 4.3, what does this concept mean? But if the researcher tells management that 70 percent of their customers are promoters, it’s much easier to understand. Also, the NPS can be benchmarked since the process is standardized. One can search the Internet and get scores from companies in the same industry and get an idea of where a firm stands relative to its competitors.

1. Differentiate between the four types of measurement scales, and discuss the types of information contained in each.

Answer: Nominal scales: mutually exclusive and collectively exhaustive. Every observation will fall into one of several categories and into only one. An example of a category in a nominal scale is: What is your sex? \_\_\_\_\_ Male \_\_\_\_\_\_Female

Ordinal scales:have the labels of nominal scales plus the ability to order data. Numbers are used to rank the categories.

Interval scales: have categories which are broken into equal segments. The numbers used as categories do have meaning and measure how much of a trait an observation has.

Ratio scales:have all of the advantages of the other scales plus it has a meaningful origin. A ratio scale is indicative of the true value or amount of the variable being observed. Examples of these are weight, height, and population counts.

1. Discuss how paired comparisons overcome several problems of traditional rank-order scales.

Answer: First, it is easier for people to select one item from a set of two than to rank a large set of data. Second, the problem of order bias is overcome; there is no pattern in the ordering of items or questions to create a source of bias.

1. Discuss the drawback(s) of paired comparisons.

Answer: Since all possible pairs are evaluated, the number of paired comparisons increases geometrically as the number of objects to be evaluated increases arithmetically. Thus, the number of objects to be evaluated should remain fairly small to prevent interviewee fatigue.