A PARADIGM FOR DEVELOPING BETTER MEASURES OF MARKETING CONSTRUCTS

Gilber A. Churchill (1979)

Introduced by Azra Dedic
in the course of “Measurement in Business Research”
Introduction

- Measurements are “rules for assigning numbers to objects to represent qualities of attributes”.
- What is measured? ATTRIBUTES of objects. NOT objects themselves.
- What is the goal? To have measures that are RELIABLE and VALID.
Construct

- Construct, e.g. customer satisfaction
- True level of satisfaction (True score) denoted $X_t$
- Observed score $X_0$, rarely similar to $X_t$ due to differences in stable characteristics, transient personal factors, situational factors etc.
Validity and Reliability

\[ X_0 = X_t + X_s + X_r, \text{ where} \]
- \( X_s \) – systematic source of error
- \( X_r \) – random source of error

Validity: \( X_0 = X_t \)

Perfect reliability: \( X_r = 0 \)

- Validity \( \Rightarrow \) Reliability
- Reliability is necessary but not sufficient for Validity
Validity and Reliability (2)

- Objective: find X0 that approximate Xt
- Measures are inferences, their “goodness” is supported by the evidence, that is based on reliability or validity index
- Reliability forms: split-half, test-retest etc.
- Validity forms: face, content, predictive, concurrent, pragmatic, construct, convergent, discriminant.
Procedure for developing measures

1. Specify domain of construct
2. Generate sample of items
3. Collect data
4. Purify measure
5. Collect data
6. Assess reliability
7. Assess validity
8. Develop norm
Specify domain of the construct

- Exactly defining what is included in the definition and what is excluded
- Consulting the literature
- Widely varying definitions should be avoided
- Example: to measure customer satisfaction
  - Measure both expectations at the time of purchase and reactions at some time after the purchase
    - Expectations: cost, durability, quality, operating performance, aesthetic features, sales assistance, advertising, availability of competitor’s alternatives,
Generate sample of items

- Literature searches
- Experience surveys
- Insight-stimulating examples
- Critical incidents and focus groups
Purify the measure

- Domain sampling model: purpose of any particular measurement is to estimate the score that would be obtained if all the items in the domain were used.
- In practice use of SAMPLE of items.
- Measurement error due to inadequate sampling.
- Correlation matrix of the items in the domain.
  - Average correlation in the matrix.
  - Dispersion of the correlation about the average.
- Assumption: all items, “if they belong to the domain of the concept, have an equal amount of common core.”
Coefficient Alpha

- Measure of internal consistency of a set of items
- Low coefficient alpha indicates that the sample of items badly describes the construct which motivated the measure
- Procedure by low alpha: some items should be eliminated.
  - Calculate correlation of each item with total score
  - Plot the correlations by decreasing order of magnitude
  - Items with correlations near zero should be eliminated
  - Items of substantial drop in the item-to-total correlations also deleted
- Mistake to do split-half reliability
Purify the measure (2)

- Desirable outcome: high coefficient alpha, dimensions agree with the conceptualized. Then, additional testing with a new sample of data.

- Second outcome: Factor analysis suggests the overlapping dimensions. Items with pure loadings on the new factor are retained, new alpha calculated.

- Non-desirable outcome: alpha coefficient is low and restructuring of items forming each dimension is unproductive. Loop back to 1. and 2.
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Assess reliability with new data

- Source of error within a test or measure is the sampling of items.
- Coefficient alpha is the basic statistic for determining the reliability of a measure based on internal consistency, but it does not estimate errors external to the instrument.
- Collect additional data to rule our the chance possibility of previous findings
- Do not use test-retest reliability
Assess Construct Validity

- Face or content valid measure has an appropriate sample
- To establish construct validity
  - Determine the extent to which the measure correlates with other measures designed to measure the same thing
  - Determine whether the measure behaves as expected
Correlations with Other Measures

- Any construct or trait should be measurable by at least two different methods
- Convergent validity – extent to which it correlates highly with other methods designed to measure the same construct
- Discriminant validity – the extent to which a measure a novel
- Multitrait-multimethod matrix: methods and traits generating it should be as independent as possible
Multitrait-multimethod matrix

Table 1 of .450, .395 and .464 are all significant at the .01 level.
Does the measure behave as expected?

- Internal consistency is insufficient condition for construct validity
- Assess whether scale correctly predicts criterion measure (criterion validity)
  - The constructs job satisfaction (A) and likelihood of quitting the job (B) are related.
  - The scale X provides a measure of A.
  - Y provides a measure of B.
  - X and Y correlate positively.
- Establish the validity by relating the measure to a number of other constructs and not only one
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Developing Norms

- Assessing the position of the individual on the characteristic is to compare the person’s score with the scores achieved by other people.
- Norm quality depends on both the number of cases on which the average is based and their representativeness.