

1 Calibration

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3 In fsQCA, the term refers to the operation of fitting the original data into membership
4 scores ranging from 0 to 1. In the fields of engineering and natural sciences, calibration
5 involves adjusting the sensitivity of measuring instruments using samples with known
6 values (e.g., standard weights, standard samples, gauge blocks). This usage of the term
7 is unique to QCA. In QCA, there is no prescribed method for “calibration”; it is
8 determined by the analyst’s judgment. The act of adjusting the input data values based
9 on the analyst’s judgment should be referred to as tuning. This is very risky and must
10 be done carefully and in a generally acceptable manner. Various methods can be
11 considered for tuning depending on the attributes of the data. For numerical data, one
12 method is to assume a normal distribution and use the cumulative probability density
13 as the membership score. Even in this case, it seems that manipulating the position of
14 the cumulative probability of 0.50 is often done as tuning. The validity of this should be
15 confirmed by comparing several tuning methods. In the case of survey responses using
16 a 5-point or 7-point Likert scale, it is not impossible to calculate the cumulative
17 probability density using the mean and standard deviation, but this would result in the
18 neutral position of “neither agree nor disagree” not being 0.50. In this case, it is practical
19 for the analyst to assign membership scores based on their judgment, but the impression
20 of arbitrary manipulation should be avoided. For example, in the case of a 7-point scale,
21 the degrees of agreement could be assigned as follows: strongly agree, agree, somewhat
22 agree, neither agree nor disagree, somewhat disagree, disagree, strongly disagree, with
23 scores of 0.95, 0.80, 0.65, 0.50, 0.35, 0.20, and 0.05, respectively. For a 5-point scale, the
24 scores could be 0.90, 0.70, 0.50, 0.30, and 0.10 for strongly agree, agree, neither agree
25 nor disagree, disagree, and strongly disagree, respectively. Of course, the intervals can
26 be adjusted based on the analyst’s judgment, but in such cases, the necessity and validity
27 of the adjustments should be thoroughly explained.