Moving Toward a Global CSA Standard

A global CSA standard regarding the use of the ratio-based measurement scale holds the promise of enabling the audit community and management to compare functional and corporate performance across the industry to enable auditors to calculate industry averages and best-in-class performance attainment.

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Throughout years of increased use, the methodologies behind control self-assessment (CSA) have continued to evolve to meet organizations' specific needs and objectives. However, there is an opportunity for practitioners to further advance the value of CSA. By joining together in drafting and adopting a global CSA standard, practitioners can advance the state of CSA's tools and technology into a new performance measurement realm — a realm that vastly supersedes today's use of spreadsheets and survey tools as CSA instruments.

As any CSA practitioner knows, CSA questionnaires that are designed and deployed properly can provide high returns for assessing performance and determining process maturity. This is especially true if the CSA were to leverage a specific type of measurement scale, which is a ratio-based scale. Today, the wide majority of CSAs that use spreadsheets and survey tools use another type of scale known as the Likert scale. Likert scales cannot adequately assess performance because they are only able to support the limited math function of calculating a median. CSAs that leverage ratio-based scales allow practitioners to go far beyond calculating medians because ratio-based scales can express proportion. This proportional scaling capability has a relatively unknown yet significant side benefit: being able to combine quantitative and qualitative data within a single assessment. The bottom line is that ratio-based scales can help measure performance at a very granular level that is not possible with Likert scales. A CSA that employs a ratio-based scale rather than a Likert scale will generate significantly more meaningful information. However, there is no current CSA or survey standard that relates to the use of ratio-based scales for gathering data and scoring performance. Nor is there widespread understanding on the importance of ratio-based scales. If a standard on the use of ratio-based scales within CSAs can be created, practitioners will be able to clearly differentiate CSA questionnaires from surveys and move to a new level of comparable industry benchmark data.

SURVEYS AND LIKERT-BASED SCALES

A Likert scale (pronounced “lick-ert”) is a type of psychometric[1] scale that was developed by by Rensis Likert in 1932. This type of scale is often used in questionnaires and is the most widely-used

[1] Psychometric: The psychological theory or technique of mental measurement.

scale in survey research. Likert scales ask respondents to specify their level of agreement to a list of statements. Following is an example of a statement using a Likert scale:

Our auditors are good communicators.

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

The Likert scale has major drawbacks in mathematical meaningfulness when used for performance assessment. This is because the scale uses ordinal numbers, which means that only a median can be calculated. A median is a value that is obtained by dividing the higher half of a sample, a population, or a probability distribution from the lower half. Ordinal numbers cannot support the calculation of an average or other more complex calculations that help assess performance. Today, many survey tool technologies do not provide survey developers with the capability to set up a ratio-based scale. It's not that survey tools can't support this function, but at this time, most do not. This deficiency also is similar to the use of spreadsheets. Many practitioners employ a spreadsheet to capture survey information using a Likert scale. (Using Visual Basic[2] programming techniques, spreadsheets can be enhanced to support a ratio-based scale, but the work needed to accomplish this, called an eigenvector and eigenvalue matrix calculation[3], is extremely difficult. Most people simply are not capable of tackling this complex task.)

A Review of Number Types

The Likert scale example (auditors are good communicators) uses an ordinal number coding. Remember that term? If not, here's a review of the different types of numbers. Understanding these number types is critical to understanding the meaningfulness of various mathematical scales.

- **Nominal numbers** are used only for identification. They do not indicate quantity, rank, or any other measurement. For instance, nominal numbers are used to uniquely designate each horse in a horse race.
- **Ordinal numbers** are used to denote a position in an ordered sequence (e.g., first, second, third, fourth). In the horse race example, the first three horses to cross the finish line are defined by an ordinal scale as the first place winner, the second place runner-up, and the third place show.
- **Interval numbers** define the distance between two ordinal numbers. Here's an example: The first-place horse finishes a race ahead of the second-place horse by a nose and ahead of the third-place horse by four horse lengths. Interval numbers only support the operations of addition and subtraction.
- **Ratio-based numbers** are used to express proportion. They support multiplication by a constant to determine equal ratios — or increments on a scale — to enable the operations of addition, subtraction, multiplication, and division. In the horse race example, ratio-based numbers provide a major advantage because it can be determined how well horses perform on tracks of varying lengths. An interval number, on the other hand, cannot do this because it only relates to the length of the race track for a specific race.

Figure 1 depicts the meaningfulness of measurement types on one axis, and the ability to perform mathematical calculations on the other.

[2] Visual Basic (VB) is an event-driven programming language and associated development environment from Microsoft. VB has one of the largest user bases in business programming.

[3] In mathematics, an eigenvector of a transformation is a vector which, in the transformation, is multiplied by a constant factor, called the eigenvalue of that vector. Often, a transformation is completely described by its eigenvalues and eigenvectors.

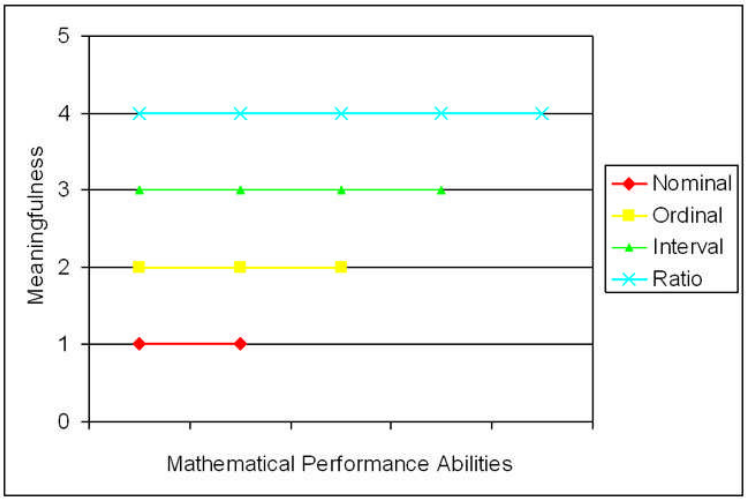

Figure 1: Benefit Levels of Measurement Types

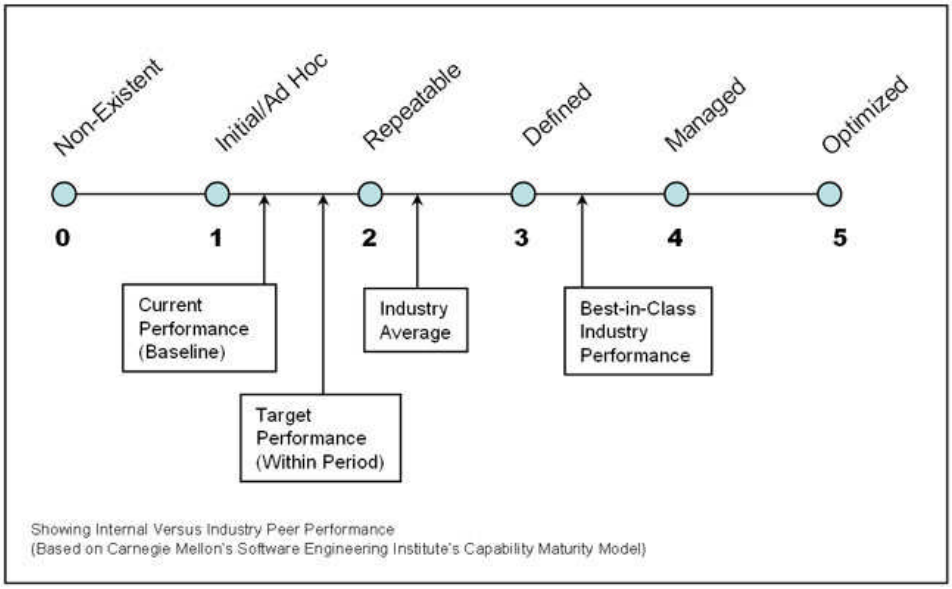

Figure 1: Granular Ratio-based Scale

CSAS AND RATIO-BASED SCALES

CSAs, on the other hand, have the potential to transcend the survey and Likert approach and take a more rigorous mathematical performance assessment discipline. This can be achieved by using a ratio-based numbered scale that has a “true zero” starting point and can express increments of proportion in a highly granular way, allowing mathematical operations that would not be possible using an ordinal scale. For example, a company wants to compare its process performance in the three domains of governance, risk, and compliance as one overall score. To do this, the company needs to determine the numerous criteria that make up each of

these areas and rate their performance for each criterion whether it is a process, discipline, task, or practice. Then, the individual scores can be rolled up and plotted on a maturity scale like the one in Figure 2. The company could then determine how well they are faring as compared with industry peers using benchmark data.

By using a ratio-based scale, the results can be added, subtracted, multiplied, and divided. Ratio-based scales also have another unique property: They allow combining the results of questions that focus on quantitative data along with the results of questions that focus on qualitative data. This synthesis of quantitative hard data and qualitative soft data enables practitioners to produce an ordered list of priorities. This prioritization capability is the foundation for portfolio assessment. It allows practitioners to set up any number of criteria they need to go into the analytical content of the CSA. Therefore, practitioners can use ratio-based scales to help them understand how well a company is doing in process performance, implementing a best practice framework, or determining what compliance projects are most important. In fact, this is the best approach for generating a risk-adjusted cost to benefit analysis. This is a best practice that would benefit any compliance or governance activity when practitioners need to allocate limited resources to a large list of potential remediation or improvement projects.

COMBINING IT ALL INTO A GLOBAL CSA STANDARD

By creating and administering a global CSA standard on ratio-based performance scaling, industry and the audit community could take a significant step forward in conducting functional and enterprise performance assessment. Only then will mathematically valid peer-to-peer and best-in-class comparisons be possible. Surveys have their place for median-oriented data calculations and comparisons, but if by creating a definitive CSA standard that specifies the use of a ratio-based scale, performance assessment would move to a whole new level. A global CSA standard would allow companies and auditors to address the following concerns on which Likert-based, ordinal-centric surveys have fallen short:

1. Measure progress using both qualitative and quantitative data. For instance, in the information technology governance area, progress needs to be charted with tangible service level data along with "soft" or "gut feel" ratings of organizational capability that may not be backed up by hard data (e.g., the degree of understanding that staff has on a specific policy or standard operating procedure).
2. Synthesize data and provide a valid mathematical score for a wide range of measurement criteria.
3. Benchmark scores across industry peers (e.g., industry average calculation).
4. Roll up a set of individual CSA performance measures into a higher-level functional or enterprise-level maturity model that provides further value (e.g., best-in-class or level-of-progress calculation).
5. Provide role- and employee-specific audit trails of CSA data values that can be baselined. The employee-specific audit trail has a significant side effect of securing accountability and making sure that the employees have full ownership of their own scores for a specific practice, process, or function.

THE END GOAL

Considering a global CSA specification that clearly defines the use of ratio-based scales as a standard for addressing analytical assessment of performance criteria — which is not being addressed today by surveys that use Likert scales — will provide the ability to clearly differentiate a CSA questionnaire from a survey. A global standard also would provide a means to compare functional and enterprise performance on an apples-to-apples basis across and within companies.

Ultimately, if an industry standard regarding the use of ratio-based scale measurement within CSA instruments was devised and adopted, practitioners would then be able to generate performance data that combines both qualitative and quantitative data and encompasses any number of performance criteria. At the end of the day, it's the meaningfulness of the data that is collected and the math functions that practitioners can employ that will help improve operational and financial performance.

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