On Further Improvement of the Technique of Evaluating Summer Institutes

H. KRISHNA IYER and P. N. KAUL
Central Institute of Fisheries Technology, Cochin - 682 029

Data from an earlier study are reanalyzed to improve upon the evaluation measures of summer institutes. The Summer Institute Efficiency Index is improved by using weighted geometric mean using different ranks as weights for the several dimensions. The coverage utility index is improved by taking the ratings given by all the participants.

As an improvement over coverage utility index developed by Ambastha & Singh (1975), Desai & Kaul (1982) have suggested the Summer Institute Efficiency Index (SIEI), as a method for evaluation of Summer Institutes when the dimensions to be evaluated are many. This communication attempts to suggest an improvement over the SIEI so that this index could be more realistic.

Materials and Methods

The 18 filled up schedules of the participants of the Summer Institute on "Non traditional diversified fishery products and by-products" as reported in Desai & Kaul (1982) formed the sample data for the study. The scores obtained by the 18 respondents on four dimensions viz. coverage, utility, teaching quality and skill acquisition were taken up for the study. Desai & Kaul (1982) have used the formula,

$$\frac{\sum_{i=1}^{N}\left\{\frac{e_1}{p_1}+\frac{e_2}{p_2}+\ldots\ldots\frac{en}{Pn}\right\}\times 100}{N}$$

to work out the summer institute efficiency index, where e_1, e_2..en refers to score obtained an each dimension, p_1, p_2...pn refers to potential score obtained on each dimension, n refers to the no. of dimensions rated and N refers to the no. of participants. This formula has two drawbacks:

1) The authors have used arithmetic mean as the average to work out individual index and
2) All the dimensions are given equal weightage.

As an improvement we have taken geometric mean as the average for working out individual index since for ratios, geometric mean is the most appropriate average. Also we have assigned weights for the dimensions according to their relative importance. The 4 dimensions were ranked according to relative importance in the following order: skill acquisition, utility, teaching quality and coverage and the weights assigned to them were respectively 4, 3, 2 and 1. The weighted geometric mean of the ratio, weighted arithmatic mean of the ratio and unweighted AM of the ratio are given in Table 1 for all the 18 participants. The formula used for calculation of the Summer Institute Efficiency Index is,

$$\frac{\sum_{i-1}^{N}\text{Antilog}\left[\frac{\sum_{j=1}^{n}\omega j\,\log\left(\frac{ej\times 100}{Pj}\right)}{\sum_{j=1}^{n}\omega j}\right]}{N}$$

where wj represents weight assigned to the j th dimension and N represents total no of participants.

When there are only two dimensions, Ambastha and Singh (1975) have worked out the coverage utility index by framing the contingency table for coverage and utility and by posting the topics on the cells. In this method the individual participant has not been given any importance for working out the index and hence the coverage utility

Table 1. *The log of the ratio of individual scores as 4 dimensions to potential score and the efficiency index*

Sl. No. of participants	Skill acquisition	Utility	Teaching quality	Coverage	Index using weighted G.M. as average	Index using weighted A.M. as average	Index using un weighted A.M.
1	1.8129	1.9700	1.9903	1·9907	81.90	83.33	88.47
2	1.8129	1.8782	1.9488	1.9700	75.06	75.78	80.70
3	2.0000	1.8240	1.8520	1.8519	79.95	81.33	77.22
4	2.0000	2.0000	2.0000	2.0000	100.00	100.00	100.00
5	1.9542	1.8908	1.9379	1.9265	84.96	85.11	84.72
6	2.0000	1.9150	2.0000	2.0000	94.30	94.67	95.56
7	1.9294	1.9488	2.0000	1.9803	90.03	90.22	92.36
8	1.7404	1.8653	1.9379	1.9265	68.55	69.78	74.86
9	1.7404	1.8782	1.8382	1.9150	65.89	66.67	70.42
10	2.0000	1.8909	1.8908	1.8653	85.49	86.22	82.22
11	2.0000	1.9700	2.0000	1.9803	97.50	97.55	97.22
12	1.9294	1.9265	1.9903	1.9903	88.47	88.67	91.25
13	1.6021	1.9265	1.8653	2.0000	61.93	66.00	74.44
14	1.8451	1.8240	1.9150	1.8908	71.99	72.22	74.17
15	1.9031	1.8653	1.9265	1.9265	79.21	79.33	80.55
16	1.6021	1.9595	2.0000	1.9488	66.62	72.22	80.00
17	1.3979	1.8782	1.8520	1.8782	47.95	54.44	61.81
18	2.0000	2.0000	2.0000	2.0000	100.00	100.00	100.00

SIEI (using weighted G.M. as average) – 79.99%
SIEI (using weighted A.M. as average) – 81.30% SIEI (unweighted) – 83.67%

Table 2. *Coverage utility index for each participants*

Sl. No. of participants	Coverage utility index (%)
1	91.11
2	71.11
3	47.41
4	100.00
5	65.19
6	82.22
7	85.93
8	59.26
9	64.44
10	51.11
11	90.37
12	82.96
13	83.33
14	60.74
15	61.48
16	83.70
17	52.59
18	100.00

Average coverage utility index = 74.05%

index is having an upward bias. But we have worked out the coverage utility for each participants separately and then averaged for all the participants and given in Table 2, thus obtained a better index for judging the coverage and utility.

Results and Discussion

The SIEI index worked out by Desai & Kaul (1982) for these data was 83.67%. According to the weighted geometric mean method the SIEI index worked out to be 79.99%. The corresponding weighted arithmatic mean index was 81.3%. Though weighted arithmetic mean index and unweighted arithmetic mean index shows higher index than the weighted geometric mean index, considering the nature of the data and appropriateness of average, the weighted geometric mean index can be taken as a better index for judging the efficiency of the summer institutes.

The coverage utility index for the same data worked out as per Ambastha & Singh

(1975) method is 84.44%. As per the improved method the same worked out to be 74.05%, showing a decrease. This is because in the first method no proper representation was given to individual participants for working out the index while in the latter, all participants are given due representation to work out the index. Moreover, the weighted geometric mean index is higher because of taking into consideration more dimensions.

The coeft. of correlation between SIEI by the weighted AM and weighted G.M. is 0.9952 for $N = 18$ which is highly significant ($P < 0.001$) indicating high degree of agreement between the two.

The authors are thankful to Shri M.R. Nair, Director, Central Institute of Fisheries Technology, Cochin–682 029 for permission to publish this paper.

References

Ambastha, C. K. & Singh, Y. P. (1975) *The Haryana Veterinarian,* 14, 83

Desai, G. R. & Kaul, P. N. (1982) *J. Educn. Psychology,* 34, 254