CONVERGENT VALIDITY

SUMMARY   Convergent validity was tested by comparing 19 plants of the same character involving 188 people. Individuals at the 19 plants were tested on all four strategic styles, and every test and associated multiple contrast performed failed to find any differences as a result of location at the standard $p < .05$ level of significance, providing evidence for convergent validity.

Convergent validity is a facet of internal validity and has variously been considered a component of construct validity and predictive validity. The concept of internal validity can be traced to Donald Campbell who argued that to be valid, a construct must be triangulated to insure that it is, in fact, a truly distinct construct and not a ill-defined component of another variable (Campbell & Fiske, 1959). In other words, it is a way to insure the clarity of thought.

Convergent validity tests that "measures of constructs that theoretically *should* be related to each other are, in fact, observed to be related to each other (that is, you should be able to show a correspondence or *convergence* between similar constructs)" (Trochim, 1999b). Convergent validity is typically tested by comparing a particular index with another index that is external to the theory but which purports to measure the same or a similar construct. For example, a test score in addition might be correlated to another test that measures ability in subtraction. Theoretically, these abilities should be related since they are both distinct subsets of arithmetic.

In the case of Organizational Engineering, the theory is seminal and there are, in the authors opinion, no obvious correlates for other the-

ories that could be relied upon for the purposes of convergent validity. However, there are internal consistencies (the focus of internal validity) that can be tested for convergent validity.

One test of convergent validity for individuals might be inferred from the similarity or convergence of the strategic patterns across years. This test is detailed in Appendix 1, where it is shown that the database remained constant for each measure at the .05 level of significance from 1994 through 1999. In other words, it was expected that the data would converge on similar strategic patterns, and that is what, in fact, occurred.

A test of convergent validity at a group level might be obtained by testing whether organizational units that differed only by location converge on the same strategic pattern. In other words, the organizational environments have the same characteristics and should attract and retain people who subscribe to roughly similar strategic pattern preferences. Thus, there should be a convergence in strategic patterns across these facilities.

The database contained information on 19 waste treatment facilities in different geographic locations. Strategic style data from the management team of each plant was available and provided an individual N of 188, with the average plant having a management team of 9.9 people.

Using the Shapiro-Wilk test, the hypothesis of normality was rejected in at least one group out of the 19, for each of the four measures of strategic style. Therefore the use of parametric statistics (e.g., difference in means, regression, etc.) would yield unreliable results.

The four measurements of strategic style across treatment facilities were checked for equality of variances using Levene's statistic ($F_{(RS)} = 0.926$, $p = .548$; $F_{(LP)} = 0.799$, $p = .6998$; $F_{(HA)} = 1.049$, $p = .4081$; $F_{(RI)} = 0.906$, $p = .5722$) and there was no significant evidence found for different variances. Therefore, the Kruskal-Wallis test is an appropriate procedure to test whether the 19 different plants did, in fact, display similar strategic profiles as predicted by Organizational Engineering theory.

The hypothesis tested was that the plants did not differ from each other in the strategic profiles of the management team. The results

are displayed in Table 7. Each of the 4 omnibus tests (corresponding to each strategic style) failed to reject the null hypothesis, and every pairwise group comparison for each style resulted in a *p*-value of .999 or above. The failure to reject this hypothesis by the Kruskal-Wallis test provides evidence for the expected convergence of the different locations on a particular strategic profile distribution.

These findings lend credence to the convergent validity of Organizational Engineering.

Table 7

CONVERGENT OF STRATEGIC PROFILES ACROSS SIMILAR FACILITIES

Strategic Style	Kruskal-Wallis H	*P*	Projec at 95% Confidence Level
Reactive Stimulator	25.320	0.1163	NO
Logical Processor	21.943	0.2345	NO
Hypothetical Analyzer	8.111	0.9769	NO
Relational Innovator	9.974	0.9328	NO

N= 19 Plants
188 People