

Cross Country Differences in Management Styles: A Comment

Niall Duffy

In a recent issue of this journal the authors of a study on differences in management styles across a group of countries (Murray, Moran and Boulgarides 1988, vol 9, hereafter referred to as MMB) reported finding evidence of significant variation in attitudes of groups of executives surveyed in the Republic of Ireland, Northern Ireland, Japan, the Republic of Korea and the United States. The purpose of this short paper is to suggest that at least in certain respects a more detailed statistical analysis of the data does not support the conclusions reported.

To use statistics to test cross-cultural management decision styles is a valid procedure, but the value of the results depends critically on the use of appropriate and statistically significant methods of analysis.

At the level of methodology there appears to be some uncertainty in the MMB paper as to how the decision styles were actually assigned: the authors merely say where the data was collected but not how. Hence, we do not know if managers were asked, for example, to choose a decision style they thought to be the most appropriate for a manager, or whether they assigned themselves these decision styles, or if these decision styles were assigned to them by some objective method. This is an important point as we do not know if the authors are examining cross-cultural differences in *actual* decision styles or cross-cultural differences in the 'rating', or, valuing of decision styles. If the managers were asked to assign their own ratings, then for example we might for cultural reasons, expect Irish managers to rate anything related to 'social' or 'inter-personal' lower than other styles because they considered it to be weak management. That would not imply, however, that Irish managers are actually less 'socially' orientated.

However the most significant criticism of the study is the sample size. The authors suggest that the study is "limited in its significance" (p.36) by the sample sizes. The problem is, in fact, more serious than this reservation suggests. In four of the five samples examined the sample size was in the range 12 to 17. Results based on these sample sizes are of very doubtful statistical significance.

In an unusual procedure, presumably designed to make comparisons easier, the authors appear to have multiplied the observations in each national sample so as to produce a nominal sample of 300 for each, with a pro rata division of the 300 by the proportions in the original samples. Their reasons for doing this have to be inferred as they are not explained in the text.

The differences in the inter-country decision styles are then obtained by subtraction, and are referred to as 'points'. The highest difference is for Behavioural comparing the North of Ireland with Japan, -14 points. This is cited as one of the "significant differences" yielded by the inter-country comparisons. However this is purely a qualitative result and without reference to the total cannot be considered a quantitative or significant result. Table 1 below shows the residuals obtained by the authors in comparing the ROI and Japan, but with the differences then expressed as percentages of the total (i.e. 300).

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Table 1: Difference in decision styles between ROI and Japan

STYLE	ROI-JAPAN	%
Directive	+ 6	2.0
Analytical	+ 5	1.7
Conceptual	+ 2	0.7
Behavioural	- 13	- 4.3

A gap of 4.3% with sample sizes of 16(Japan) and 12(ROI) can hardly be considered as a significant difference in any sense.

Perhaps the most surprising aspect of the work is the omission of a chi-squared test (a test of independence). This may be because the chi-squared generally has at least five frequencies in each cell, which would in this case require a sample of over 20. Table 2 below shows the results of a chi-squared analysis.

The first result is on the whole five groups. The null hypothesis is that there is no difference in management styles between countries and that there is also no difference between decision styles in each country.

Table 2: Chi-Squared Tests

Countries	n	df	C-SQ	C-SQ(10%)	Accept Null Hypothesis
A: All Countries	—	12	2.014	18.549	yes
B:					
(i) Japan vs Korea	14	3	0.040	7.815	yes
(ii) Japan vs America	71	3	0.924	7.815	yes
(iii) Japan vs N. Irish	17	3	0.319	7.815	yes
(iv) Japan vs S. Irish	12	3	0.135	7.815	yes

note: the figures used in these tests was obtained by estimating the real sample figures. This was done by dividing the figures in the text by 300 to obtain percentage rates for each decision style and then multiplying by the sample size(n) to find the 'real' figures. In part B, the Japanese figures were used as the Expected rates.

Part B of the table corresponds to the four tubular comparisons produced by the authors. As we can see the null hypothesis (no difference between countries or styles) has been accepted in each case (at 10% level). It is interesting to note that using the boosted samples of 300, the chi-squared is significant at the 5% level. However a result from a 'boosted' sample is not significant or statistically valid.

The authors include a table showing levels of education of the various managers. It is unfortunate that they did not pursue this, as a crosstabulation would not have been a difficult or time consuming task given the sample sizes. It would have been interesting, for example, to see if higher education was correlated with, say, Analytical style. Some analysis of inter and intra country education would surely be important in examining cross-cultural differences.

The overall conclusion is that no conclusion can be drawn from this study. The sample sizes ensure that the work produces no significant results, and the chi-squared shows that there is no difference in inter and intra country management decision styles. Cross-cultural differences in decision styles is an interesting hypothesis for students of both management and economics. Unfortunately, the MMB study does not on close examination provide statistical evidence to support it.

REFERENCE

Murray, M., B. Moran and J. Boulgarides: "Management Decision Styles: a Cross Cultural Pilot Study"; *IBAR — Irish Business and Administrative Research*, Vol. IX, 1988, pp. 30-37.

Reply to Duffy — Maurice Murray

The main criticisms of the MMB paper seem to be:

- (i) insufficient explanation of the instrument and of how it was used;
- (ii) the small sample sizes;
- (iii) national samples have been multiplied to produce a nominal sample of 300;
- (iv) the lack of statistical analysis; and
- (v) the lack of a cross-tabulation of levels of education.

Criticism (i) — I accept this — an insufficient explanation was given.

Criticism (ii) — given that we called it a *pilot* study, that we put this study forward *tenatively*, that we acknowledged its limitations due to the small sample sizes, I must reject this as a valid criticism.

Criticism (iii) — he has misunderstood how scores were arrived at due to the inadequacy of our explanation of the method and instrument.

Criticism (iv) — having castigated us for our small sample sizes he then carries out a statistical analysis using these same inadequate samples. The very reason we did not do a statistical analysis was because of the nonsense it would produce on such small numbers.

Criticism (v) — I accept this though it was not our purpose in itself to do this at this stage.

Dr. Jackie Granless and I have carried out a much more rigorous and extensive study since involving several hundred American and Irish managers. The methodology is spelt out in it pretty fully as behoves a full-scale study. Statistical analysis and testing is used and yields interesting results. The paper is currently with the editor of a reputable journal.

I can understand Niall Duffy's frustration with the incompleteness of the MMB research but, to some extent, it is not unreasonable for *pilot* work to indicate an approach and tentative results without too much elaboration.

Editor's Comment

Niall Duffys research perspective is rather narrow when he only considers quantitative results as significant. He also seems to be confusing statistically significant results and significant results. There is no rationale provided as to why the chi-square test of significance is appropriate for this small data base.