# 國立臺灣師範大學101學年度碩士班招生考試試題

科目：英文(專門科目)　　適用系所：工業教育學系（科技應用管理組）

注意：1.本試題共5頁，請依序在答案卷上作答，並標明題號，不必抄題。2.答案必須寫在指定作答區內，否則依規定扣分。

1. Some argue that globalization benefits citizens of rich countries. Others argue that globalization benefits citizens of poor countries. What do you think? (10 分)
2. In this age of globalization, some gurus argue that all industries are becoming global and that all firms need to adopt a global strategy. Do you agree with this statement? Why or why not? (10 分)
3. Why are standards so important in many high-tech industries? What are the competitive implications of this? (10 分)
4. Why do price wars often erupt in certain industries, but less frequently in other industries? What can a firm do to discourage price wars or to better prepare for price wars? (10 分)
5. It is possible for a company to be the lowest-cost producer in its industry and simultaneously have an output that is the most valued by customers. Discuss this statement. (10 分)
6. Please summarize the following book section by using no more than 500 Chinese words. (20 分)

**Measurement Error**

Thorndike (1917) wrote, 'any measure is a compound of fact and errors which the instrument will surely make' (p. 207). This measurement error has the consequence of attenuating (reducing) correlations between two variables, and the correlation between two variables should be distinguished from the constructs or

conceptual variables to which they relate (Cohen and Cohen, 1983).

The reliability of any measure ($r_{xx}$) can be defined as the correlation between the variable as measured and another equivalent measure of the same variable. The square root of the reliability, in classical test theory, is the correlation between the true score and the score obtained by the measuring instrument.

The correlation between two scores measured at less than perfect reliability will be lower than the true correlation between the scores. Figure 1 illustrates the attenuation caused by lack of reliability. We measure the variables $x$ and $y$. But we are not really interested in $x$ and $y$ *per se*. We are interested in the underlying psychological construct that $x$ and $y$ are measuring. If you fill in a questionnaire that assesses your personality, we are only interested in the answers you give, because they tell us something about your personality - they are indirect (and imperfect) measures of personality. The true measures of personality, that we are interested in are represented by $x^*$ and $y^*$. The reliability of each of the measures is represented by $r_{xx}$ and $r_{yy}$. The correlation between the two measured variables is shown as $r_{xy}$, but this is not what we really want to know. We are interested in the correlation between the true scores - $r_{x^*y^*}$. That correlation is the correlation between the psychological constructs, and that is what we really want to know.

We can also represent this as an equation: $r_{xy} = r_{x^*y^*}\sqrt{r_{xx}r_{yy}}$.

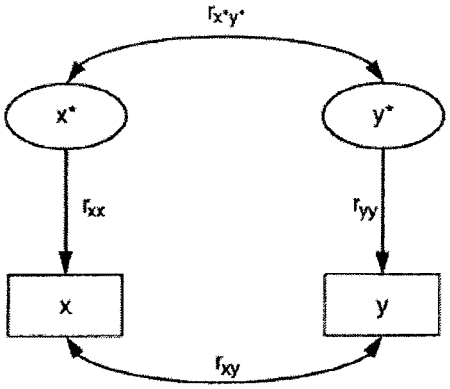


FIGURE 1 *Path diagram representation of estimated and actual correlations*

It is possible, therefore, to make a correction based on reliability, and given by Cohen and Cohen (1983), referred to as the *attenuation-corrected correlation coefficient* and shown in the following equation:

$$r_{x^*}r_{y^*} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}.$$

In conclusion, unreliability can have a dramatic effect on correlations. If, for example, the true correlation between two scores is 0.90 (a very high correlation), but the reliability of the two measures is 0.60 (a not unusually low reliability), the correlation between the measured items will be lowered to 0.54, a considerable drop.

Shevlin (1995a, 1995b) has demonstrated in a series of Monte Carlo simulation studies how failure to account for reliability can cause type II error rates to rise. Cohen and Cohen (1983; see also Cohen, Cohen, Teresi, Marchi and Velez, 1990) recommend the cautious use of the attenuation correction, or else the simple acknowledgement that correlations may be reduced because of unreliability, stating:

*unreliability in variables is a sufficient reason for low correlations; it can not cause correlations to be spuriously high (Cohen and Cohen, 1983: 7).*

Attenuation correction should be employed with extreme caution, as it makes the assumption that all error in the measurement of the variables is random and uncorrelated. It is very rare that this assumption holds true, and there is rarely any attempt to test it. Employing a structural equation modelling approach would use attenuation correction as part of the analysis, but also makes explicit the assumption about error being random and uncorrelated, and ensures that it is tested.

In a multivariate situation the position becomes more complex. Bollen (1989) provides an example based on data collected from 108 areas of the USA, and a model suggested by Lave and Seskin (1977). In the model there are seven independent variables and one dependent variable. It is assumed that all variables except the dependent variable are measured with perfect reliability. Multiple regression was carried out, with reliabilities inserted into the dependent variable of 1.0, 0.9, 0.7 and 0.5. The results are shown in Table 1.

Table 1 *The effects of unreliability on the beta weights from a regression (adapted from Bollen, 1989)*

| Reliability | $IV_1$ | $IV_2$ | $IV_3$ | $IV_4$ | $IV_5$ | $IV_6$ | $IV_7$ | $R^2$ |
|---|---|---|---|---|---|---|---|---|
| 1.0 | 0.107 | 0.090 | 0.064 | 1.008 | 0.370 | −0.063 | −0.076 | 0.839 |
| 0.9 | 0.123 | 0.086 | 0.060 | 1.003 | 0.369 | −0.062 | −0.072 | 0.840 |
| 0.7 | 0.173 | 0.072 | 0.047 | 0.986 | 0.363 | −0.056 | −0.056 | 0.845 |
| 0.5 | 0.291 | 0.039 | 0.017 | 0.947 | 0.350 | −0.044 | −0.020 | 0.855 |

It can be seen in the table that as the reliability is lowered, the regression weights alter, but in a far from predictable fashion. The loadings from $IV_1$ increase quite dramatically as the reliability falls, whereas the loadings from $IV_2$, $IV_3$ and $IV_7$ (in absolute terms) fall, and $IV_5$ and $IV_6$ remain relatively unaffected. In the situation where more than one variable is measured imprecisely, the effects of

measurement error become more unpredictable.

Source: Modified from Miles and Shevlin (2001)

7. Please translate the following sentences from Meredith and Mantel (2010) into Chinese. (20 分)

First, the expansion of knowledge allows an increasing number of academic disciplines to be used in solving problems associated with the development, production, and distribution of goods and services. Second, satisfying the continuing demand for more complex and customized products and services depends on our ability to make product design an integrated and inherent part of our production and distribution systems. Third, worldwide markets force us to include cultural and environmental differences in our managerial decisions about what, where, when, and how to produce and distribute output. The requisite knowledge does not reside in any one individual, no matter how well educated or knowledgeable. Thus, under these conditions, teams are used for making decisions and taking action. This calls for a high level of coordination and cooperation between groups of people not particularly used to such interaction. Largely geared to the mass production of simpler goods, traditional organizational structures and management systems are simply not adequate to the task.

8. Please translate the following sentences into English. (10 分)

許多廠商以產出水準預測的結果作為營運規劃的基礎，而研究廠商銷售、成本、營運利益與各種預測產出水準相互關係的分析方式稱為損益平衡分析。