

# The Quality of Distance Learning from an Economic Perspective: A Case Study from Hong Kong

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## Introduction

Distance education—which differs from conventional face-to-face classroom-based teaching in which teachers can tailor their teaching strategies and methods to their students’ learning—has become increasingly important with the developments in online learning. Because the costs of distance education are incurred mainly in the design and creation of courses and the provision of student support (therefore creating economies of scale), distance education is regarded as more cost-efficient than the traditional approach to teaching and learning (Rumble, 1997). For example, in India, distance education accounts for only one-sixth to one-third of the unit costs of conventional higher education (Panda, 2005). On the other hand, the development of distance learning courses represents mass production (Venkataiah, 2000) and can be viewed as an industrial process (Peters, 1983; 2002), which may raise student and community concerns about its quality in comparison with on-campus learning. Distance education therefore sometimes has to confront a perception that its programmes, learning materials, and student support are not of a high standard (Badat, 2005).

The quality of education can be assessed in terms of input, process, and product from a systemic perspective. When we look at distance learning (e.g., Calder, 1996; Millson & Wilemon, 2008), it is relatively straightforward to assess the quality of:

- the course materials
- the qualifications of the full- and part-time lecturers/tutors
- the facilities available to students.

Distance learning can also be judged on the basis of, for instance:

- the quality assurance mechanisms of the institutions concerned
- the level of support provided for students' learning, and the ease with which students can access it
- the extent to which students interact with their teachers and each other.

Addressing the quality of education in terms of product, rather than process, is more problematic because of possible difficulties in defining the learning outcomes that must be assessed (Zuhairi & Suparman, 2002). While Cavanaugh (2004) and Hope (2005) suggested that learning outcomes should be taken into account in assessing the quality of distance education, students and employers (as 'direct' stakeholders in educational services) tend to judge the quality of education in terms of product. Evaluation of the effectiveness of distance learning has focused mainly on students' academic performance and their feedback on their learning experiences—data which is relatively easy to obtain. However, the wide adoption of scores on assignments and examinations as a proxy for assessing quality often results in other learning outcomes (such as changes in attitudes and the development of skills) being neglected because of the greater complexity in examining them.

In 1997, Rumble conducted a survey of employers' attitudes towards the qualifications gained by United Kingdom Open University (UKOU) students in the 1990s, concentrating mainly on ranking their qualifications and comparing those rankings with those of other United Kingdom universities. The findings indicated that employers considered the UKOU qualifications to be of somewhat lower quality than those of the conventional universities. However, such results are based only on the employers' relative perceptions of university qualifications—the research did not investigate the performance of the UKOU and other graduates in aspects such as cognitive skills, social skills, and the ability to work effectively in groups.

When Allen et al. (2002) looked at students' levels of satisfaction with their educational experience, they found that distance education students did not differ from those in traditional higher education. Some students prefer distance learning because it provides flexibility in where and when they can study, and because they can, for instance, play and replay video and audio clips until they fully understand the content. Several other studies that compare distance and face-to-face learning have also shown no significant differences between students' test and examination scores (e.g., Schail, Barker & Beckstr, and Chen & Zimitat, as cited in Stacey & Wiesenber, 2007).

Similarly, in a comparison of traditional face-to-face and online learning for undergraduate nursing students, Carbonaro, Dawber, and Arav (2006) reported that the outcomes of mid-term examinations were comparable although, in the final examinations, students in the face-to-face instructional environment outperformed those who took the course online.

A holistic view of education clearly shows that knowledge is not the only competence that students have to develop while pursuing higher education. For instance, as Levin (1998) argued, students also need to develop complex reasoning and work-related skills such as exploratory thinking, problem-solving, critical thinking, the ability to work with others, and cross-cultural understanding—all of which are essential for workers in a knowledge-based economy. School-leavers are expected to have these generic skills before they enter the workplace. Hope (2005) also suggested that, when we assess the quality of education, we take account of students' development of skills as well as knowledge. However, if the product of education is not confined to academic outcomes but includes other competencies and skills, the differing requirements of workplaces for graduates' competencies in knowledge, skills, and attitudes make it difficult to compare the quality of different learning modes.

The concept of human capital leads us to regard education and training as an investment which benefits both individuals and society as a whole. This concept suggests that education raises the productivity of workers and hence increases their lifetime incomes; that is, more-educated workers are likely to receive higher pay than less-educated workers because of their higher productivity (Becker, 1993; Woodhall, 1997). From an economic point of view, in a market-driven environment workers who are more competent in the knowledge and skills that a job requires will get higher pay because, by implication, they are more productive. Thus, the earnings of workers can be used as a proxy to measure their ability and skill competencies.

From the perspective of human capital, distance education and conventional education will generate more or less the same rate of return if they are the same quality. In other words, any differences in the quality of distance education and conventional on-campus education will be reflected in a significant difference in their rates of return. Although Raza (2004) suggested that systematic research needs to be carried out on the 'value-addedness' of open and distance education interventions, research that examines the quality of distance learning from an economic perspective is still limited.

## Methodology of the study and data sets

This study adopts the earnings function approach to evaluate the effects of first-degree-level distance education and non-distance education in determining the earnings of a worker. The earnings function approach has been widely used as an empirical tool to assess the economic effects of education and training.

The general earnings function for the study of wage determinants (Levin, 1984) is:

$$Y = f(E, X_1, X_2, X_3, \dots, X_n)$$

where earnings ( $Y$ ) is a function of education ( $E$ ) and other variables ( $X_1, X_2, X_3, \dots, X_n$ ) such as the work experience, health, and gender of the workers.

The earnings function provides an estimate of the contribution of the various determinants to earnings. In this study, a regression technique and the log transformation of earnings ( $\ln Y$ ) are adopted to examine the earnings effect of education.  $\ln Y$  is used because the log of earnings will approximate a normal distribution and produce a higher R-square (Chung, 1988). The basic earnings function employed here is:

$$\ln Y = a + bEd + cWk + dGen + u$$

where  $Ed$  is the years of education,  $Wk$  is the years of work experience, and  $Gen$  is the gender of workers. The parameters  $b$ ,  $c$ , and  $d$  reflect the estimated effects of education, work experience, and gender respectively on workers' earnings, and  $u$  represents the unexplained variance in earnings.

Because census surveys do not provide any information about the work experience or work history of the respondents, Mincer's (1974) approach is adopted in this Hong Kong study. As in Mincer's work, children entering the first year of primary school in Hong Kong are 6 years old (determined by the government's school admission policies). The number of years of work experience is then obtained according to the formula:

$$\text{years of work experience} = \text{Age} - 6 - \text{years of education}$$

The years of work experience for those taking their first degree through distance learning are adjusted by adding 3 to the value obtained from the above formula because it usually takes 3 years to complete a first degree in

Hong Kong. The gender variable consists of two dummy variables,  $Gen(M)$  and  $Gen(F)$ , for male and female workers respectively. The values assigned to  $Gen(M)$  and  $Gen(F)$  are 1 and 0 respectively in order to estimate the effect on earnings of male workers relative to female workers. This study first estimates the earnings effect of education, work experience, and gender (see Model 1 in Table 1).

In the case of evaluating the earnings effect of distance education relative to face-to-face education at first-degree-level (see Model 2 in Table 1), only those employees who attain a first-degree level of education are included in the analysis. Hence, all the employees are categorised into a 'distance education group' and 'non-distance education group' to compare the earnings effect of these two modes of higher education.  $Ed(dist)$  stands for the dummy variable for studying through distance learning, and  $Ed(non-dist)$  is the dummy variable for studying in a non-distance mode (conventional face-to-face learning). The values assigned to  $Ed(dist)$  and  $Ed(non-dist)$  to estimate the effect on earnings of distance relative to face-to-face education are 1 and 0.

The earnings function used for comparing the earnings effect of the two groups is:

$$\ln Y = a + bEd(dist) + cEd(non-dist) + dWkyr + eGen(M) + fGen(F) + u$$

Since 1961 the Hong Kong Government has carried out a full census every 10 years, and a by-census in the middle of the inter-census period. The data sets in this study are obtained from the 2001 census and the 2006 by-census of the Hong Kong population. Both the census and by-census data provide information about the education, occupation, and monthly income of Hong Kong's population as well as some other major demographic characteristics. The data also indicates the delivery mode for any degrees obtained—that is, whether they were studied in the conventional system or at a distance. The study reported in this paper analysed only those aged between 16 and 65 who reported receiving an income from employment. Although it can be argued that there may be interruptions (for example, for marriage and child-bearing in the work history of female workers), they are included here because the employment of domestic household workers from the Philippines, Thailand, and Indonesia allows most females in Hong Kong to work after getting married or giving birth. Unlike in the years before the 1990s, the employment history of these workers is no longer seriously interrupted.

## Results and interpretation

The results of multiple regression analyses on the data from the 2001 census and 2006 by-census samples are shown in Table 1.

Table 1 Determinants of earnings

Variable	Coefficient (Model 1)		Coefficient (Model 2)	
	2001	2006	2001	2006
<i>Intercept</i>	7.514	7.211	9.358	9.358
<i>Edyr</i>	0.124*	0.131*	-	-
<i>Ed(dist)</i>	-	-	-0.010	0.019
<i>Ed(non-dist)</i>	-	-	-	-
<i>Wkyr</i>	0.014*	0.020*	0.017*	0.026*
<i>Gen(M)</i>	0.360*	0.301*	0.400*	0.267*
<i>Gen(F)</i>	-	-	-	-
R-square	0.310	0.295	0.111	0.124
N	157834	162008	20321	23751

\* significant at the 0.05 level

Dependent variable: log of monthly salary

In Model 1,  $LnY$  is the dependent variable and *Edyr*, *Wkyr*, *Gen(M)*, and *Gen(F)* are independent variables. The three variables—years of education, years of work experience, and the gender of the workers—can explain about 30 percent of the variance in monthly earnings in both 2001 and 2006. The effects of *Edyr*, *Wkyr*, and *Gen(M)* on earnings are all significant at the 0.05 level.

In Model 2, the comparison of the earnings effect is restricted to first-degree holders, with the aim of estimating the earnings effect of distance education relative to non-distance education. As noted earlier, *Ed(dist)* and *Ed(non-dist)* are the dummy variables for distance education and non-distance education. In this model, the value assigned to *Ed(dist)* is 1 and the value assigned to *Ed(non-dist)* is 0. In this case, the years of work experience, gender of the workers, and mode of study for first-degree programmes (whether by distance learning or not) can explain 11.1 percent and 12.4 percent of the variation in the monthly income of the first-degree holders for 2001 and 2006 respectively.

Only the coefficients of *Wkyr* and *Gen(M)* are significant at the 0.05 level. There is no significant difference between the earnings effect of distance education and non-distance education at the 0.05 level in either 2001 or 2006.

These results support the views of researchers who argue that education and working experience are significant contributors to workers' earnings, because education and training are an investment in human capital. Also, men are usually paid more than women, which is consistent with the findings of Ferber (1995) that there is an earnings gap between male and female employees. However, after controlling the educational level of the workers, there is no significant difference between the earnings effect of distance education and face-to-face education in Hong Kong in 2001 and 2006. The rates of return to learners in the two delivery systems are more or less the same—this result is not in line with the perception that distance education is of lower quality than that provided by traditional universities.

## Conclusions

Doubts about the quality of distance learning may not only make some people hesitate to undertake it, but can also adversely affect its expansion. Although some previous studies have shown that there is no significant difference in the assessment results of distance and face-to-face learners, students and employers still have some residual concerns about its quality. However, distance education not only allows learners to enjoy the benefits of flexibility in their place and pace of learning but it is also, according to the findings in this study, an investment in human capital on a par with non-distance education. In addition, as noted earlier, distance education can be more cost-effective than conventional education when high-quality learning materials and student support are offered (Butcher & Roberts, 2004; Carbonaro, Dawber, & Arav, 2006). These results imply that spending on distance education is a sound investment for developing the labour force, and so its provision is justified as a way to expand higher education.

Advances in information and communication technologies (ICTs) mean that the earlier limitations of print-based learning at a distance can be largely overcome as ICTs blur the distinction between on-campus education and distance education. Interaction among students and between teachers and students can be facilitated through, for example, online group conferencing. Therefore, if dialogue between teachers and students is an important factor in evaluating the quality of distance education (Millson & Wilemon, 2008), using ICTs could help to ensure this quality by providing the facilities for dialogue.

However, in recent years, many off-shore distance education degree programmes have been offered in Hong Kong in collaboration with overseas organisations. Many of these programmes, particularly the top-up programmes, are not adequately monitored and lack rigorous quality assurance. Therefore, to gain a fuller picture of the quality of distance education, it would be worthwhile to undertake similar analyses of the earnings effect of the various types of distance learning programmes presented not just in the Hong Kong Special Administrative Region, but elsewhere.

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### Biographical note



Before holding his position as Assistant Professor at OUHK, Chan Chi Wai was a secondary school principal and a part-time lecturer and School Development Officer at the Chinese University of Hong Kong. He was also a Subject Committee Member of the Hong Kong Examinations Authority and a member of the Textbooks Reviewing Panel of the Education Department.