RESEARCH ARTICLE

A study of applicants' preference on choosing a postgraduate programme using Discrete Choice Model

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ABSTRACT

Is having a degree of a postgraduate programme necessary and indispensable? Over the recent decades, it is noticeable to find that experienced professionals with a postgraduate degree would move up the corporate ladder relatively faster than those who do not. Because of that, professionals seeking for master degree or above are growing. In parallel, many universities in Hong Kong are offering various postgraduate programmes to attract potential applicants resulting in severe competition among universities themselves. Leveraging on the Discrete Choice Model (DCM) and sensitivity analysis, this study examined how the six essential attributes would make an impact on the ranking of a postgraduate programme. To validate the model, three hundred and thirty-nice responses were collected through a mass survey. Our findings highlighted that reputation of the university, practicality of the programme, focuses on future economies and cost of the programme were more important factors than location of the university and internationalization of students' profile for potential applicants to choose a postgraduate programme in Hong Kong. This study intended to offer practical insights and direction for universities when designing a better and more attractive postgraduate programmes.

KEYWORDS: postgraduate programme, discrete choice model, choice set, sensitivity analysis, marginal willingness-to-pay.

INTRODUCTION

Nowadays, having a degree of a postgraduate programme has become an indispensable asset for mid to high-level managers to compete in the job market. Experienced professionals with a postgraduate degree would move up the corporate ladder relatively faster than those who do not. Whether it is a professional or a young adult, Hong Kong people in general believe education would bring along career advancement. With a postgraduate qualification on one's resume, securing a good job is more likely and the possibility of getting a higher salary is increased. Indeed, many parents are willing to spend the money to ensure their children or even their grandchildren to obtain higher education. Based on a report commissioned by HSBC in February 2018, it found that the average Hong Kong parents spend annually about HK$256,000. It is more than the parents in the United Arab Emirates, which came in second and Singapore, came in third within the Pacific rim. In addition, about 88 per cent of the parents would pay for private tuition to enhance the academic performance of their children. Having a good education is fundamental, but seeking for higher education has become a norm in Hong Kong recently. To satisfy the increasing demands, many universities offer a wide spectrum of master degree programmes. Through the Internet, applicants can compare universities' postgraduate programmes in terms of course content and institutional related information. Along with this trend, it is essential for universities to understand the attributes that an applicant will consider in choosing a postgraduate programmes.

From the literature, only a few studies mentioned the important attributes for programme design. Soutar and Turner (2002) examined preferences for choosing a postgraduate programme applying Adaptive Conjoint Analysis (ACA) from a pool of two hundred and fifty-nine (259) final year high school students who were interviewed face-to-face. First, students were asked to list the essential attributes for choosing a university. Next, the attributes were rated according to their importance. Then, two hypothetical universities with description on their attributes were presented to the students, who were asked to choose one for their choice. The results indicated that the course suitability, academic reputation, job prospects, campus atmosphere and the quality of teaching are the five most important attributes for choosing a university.

Kusumawati's study (2010) followed the methodology of Soutar and Turner (2002) to survey six hundred and twenty-five (625) prospective students and identified essential factors to be considered in choosing an Indonesian public university. These students who were asked to rate a set of preferences based on different university profiles from 1 to 10. The findings indicated that Indonesian high school leavers consider advice from family, friends, and/or teachers; reputation, and job prospects to be the most important attributes when selecting a public university in Indonesia.

Nevertheless, the conjoint analysis employed by Soutar and Turner (2002), and Kusumawati (2010) were based on a rating approach. Applicant's decision making could be lopsided because other influencing factors were isolated. As such, their findings might not truly reflect the reality as no applicant could apply for more than one programme at the same time.

Kabak and Dağdeviren (2014) explored university applicants' choice in Turkey using four main factors, namely academic, social, physical and financial with eighteen sub-factors. Two hundred and twenty high school graduates were surveyed in this study. Using the pairwise comparison from students' intuition on their preference, the analytic hierarchy process (AHP) was applied to evaluate

relative weighing of each attribute. The top five essential concerns were future career prospects and opportunities; scholarship; university's social life; quality of faculty; and family, peer and teacher's influence. Due to pair-wise comparison being considered at a time, these findings may not be fitted into the real-life situation where people usually consider more than two attributes under a trade-off condition.

In this regard, we attempted to address those shortcomings of past studies by using Discrete Choice Model (DCM), which was introduced by Train (2003). DCM is an experimental design based on a realistic setup in a trade-off condition to attain accurate response with reliable statistical results. We leveraged Discrete Choice Experiment (DCE) to identify the essential concerns of an applicant when selecting a postgraduate programme. Moreover, sensitivity analyses were conducted to further investigate the impacts of those determining factors. Here following are the description of the experimental design with reference to the seminal articles (Smith, 2010; Boling, 2010; and Howard, 2011) in writing a design case.

OVERVIEW OF THE DESIGN

In usual, a postgraduate programme is planned by a group of academics from different disciplines. This approach takes on the supply side leveraging experts from a University on its programme design. However, in order to make the programme more attractive, the demand side, which are the students' perspective, should be taken care. The study introduces a new perspective from the demand side to identify the attributes that makes a postgraduate programme to be attractive.

To identify the essential attributes for selecting a postgraduate programme, our discrete choice model was developed in two phases. The first phase was using focus group interviews to sort out the essential attributes, which is a standard requirement for Discrete Choice Experiment (Gerard et al., 2010). Through two separate focus group interviews with potential applicants for a postgraduate programme, we could get more insights of what attributes are important. After systematic keyword counting on the responses in the focus group interview, we have sorted out a number of attributes for consideration. The challenge is that there are many attributes to be handled in the design of a programme.

The second phase was to conduct a mass survey based on Discrete Choice Experiment. To determine and identify important factors to fulfill the market appetite, Discrete Choice Experiment (DCE) was leveraged for comparing different programme attributes in a systematic and exhaustive manner in hope of designing an attractive programme.

Discrete Choice Experiment

The discrete choice model describes, explains, and predicts choices between two or more discrete alternatives. Discrete choice models are established through discrete choice experiments (DCE), and individuals choose the alternative with highest utility (Bhat and Eluru, 2010). Three criteria advised by Train (1993), Sorci et al. (2010) as below should be met:

- Finite number of alternatives in the choice set.
- Mutually exclusive alternatives.
- Exhaustive set of alternatives.

DCE is popular and has been used extensively in different fields to study preferences in a real situation with pre-defined and limited attributes. This enable us to measure trade-offs among preferences, to reveal and to quantify the underlying hierarchy of preferences. Cost and benefit analysis, which is lacking in traditional questionnaire survey, can also be conducted.

For our experiment to be more realistic, each attribute value is varied

among individual design case and each case design resembles a hypothetical postgraduate programme based on setting of attributes at some values using the D-Optimality criteria (de Aguiar et al., 1995). Three cases in a choice set are provided to respondents in a mass survey. With some real options presented, respondents were asked to rank the options according to their preference. The advantage of using Discrete Choice Experiment is that the each case reflects a scenario instead of a single attribute.

MATERIALS AND METHODS

A survey with the potential applicants of postgraduate programmes in Hong Kong was carried out. During the survey, the background of this study and the attributes were explained in detail with examples in order to ensure the respondents understand the task in ranking the choices. This helps to enhance the reliability of the data collected. Experimental design algorithm using Statistical Analysis System (SAS) is applied to analyze the collected data from the survey.

Focus Group Interviews

Two focus group interviews were conducted in Oct 2018 to identify the essential attributes that affect prospective applicants' preference in selecting postgraduate programme. The first focus group interview was comprised eight persons. Four of them were admitted by some postgraduate programmes in various universities in Hong Kong and the other four held a bachelor degree and were potential applicants for postgraduate programmes. The second group consisted of six persons with equal number of postgraduate programme students and potential applicants for postgraduate programme. Both groups were presented with the same set of questions as shown in Figure 1. We found out that their concerns were very similar. Based on the collected inputs from these two focus group interviews, six essential and important attributes were identified.

Figure 1: Questions for focus group interviews

Introduction

1. Please introduce yourself. (Name, Job)

2. What is your bachelor's degree?

Exploration

3. What are the essential attributes for an attractive postgraduate programme?

4. Among those proposed attributes raised in question 4, which is the most important one?

5. Which is the second most important attribute?

6. Which attribute is a must that it cannot be absent from the programme?

Ending question

7. Additional sharing and comment among interviewees.

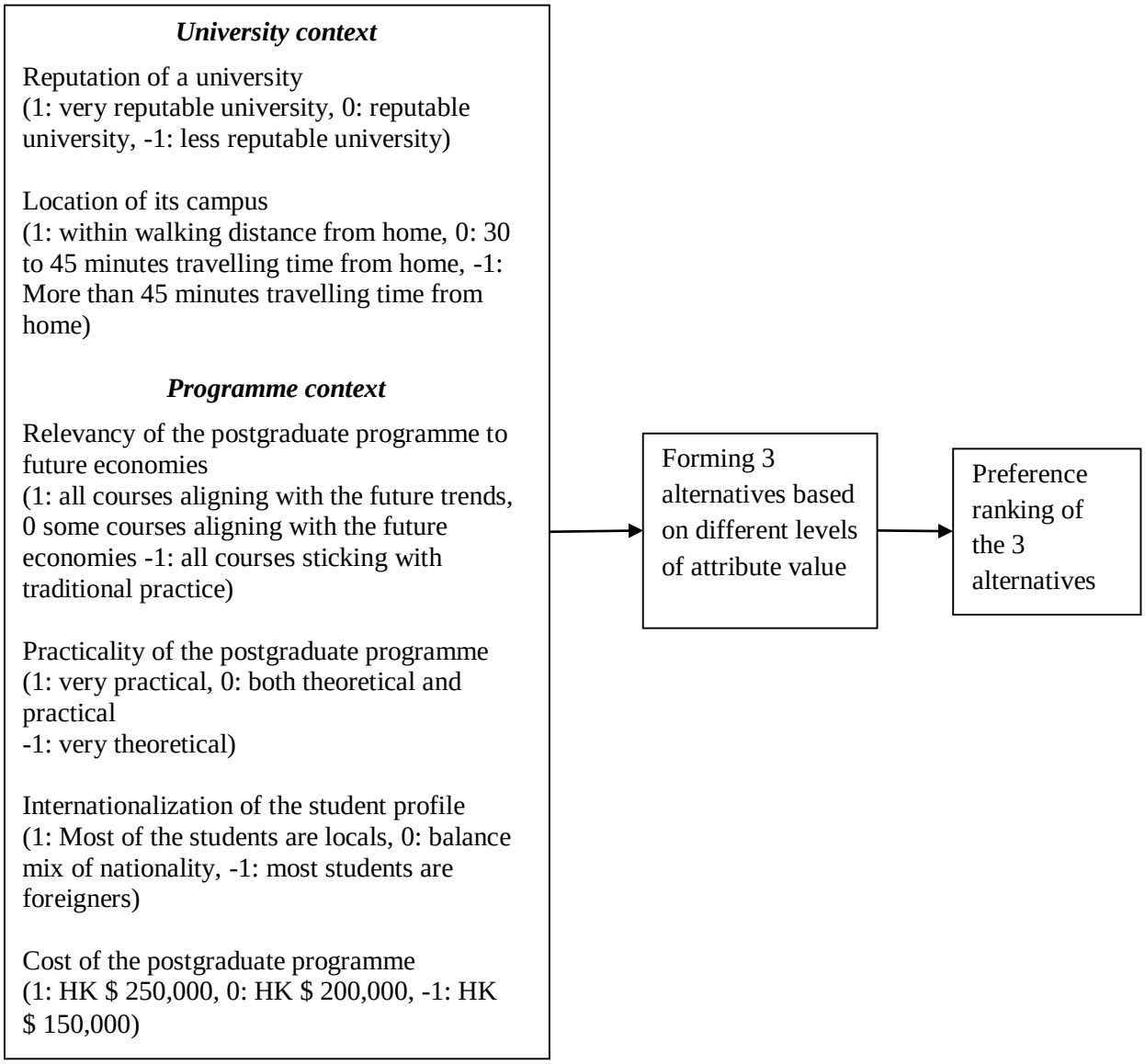
Table 1: Findings from the two focus group interviews

Essential attributes as suggested in question 3	Counting for the most important attribute based on two focus groups.	Counting for the second most important attribute based on two focus groups.	Counting for the "must have" attribute based on two focus groups.
Reputation of a university	6	1	11
Location of its campus	1	2	0
Facilities of its campus	0	0	1
History of a postgraduate programme	0	0	0
Cost of a postgraduate programme	0	1	2
Internationalization of the student profile	0	1	3
Practicality of a postgraduate programme	4	0	3
Relevancy of a postgraduate programme to future economies	1	5	2
Opportunity for internship	0	0	0
Workload	0	0	0

As shown in Table 1, ten attributes were generated from the focus group interviews. To create a Discrete Choice Model, we relied on questions 4, 5 and 6 in the focus group interview as shown in Figure 1, which address the most important attribute, the second most important attribute and the must have attribute. The number indicated in Table 1 is the counting of the attribute being mentioned by the respondents in the two focus group interviews. Six essential attributes: reputation of a university, location of its campus, cost of the postgraduate programme, internationalization of the student profile, practicality of the postgraduate programme and relevancy of the postgraduate programme to future economies were identified. These six attributes were then categorized into university context and programme context respectively and were shown in Figure 2.

Figure 2: framework for preference ranking of a postgraduate programme

Theoretical Model



From combinational logic, six attributes can generate 729 different options. To determine the relevant importance of the 6 attributes and to reduce respondents' burden to rank among 729 options, we applied the modified Federov's method (Johnson et al., 2013; Huber and Zwerina, 1996; Kuhfeld, Tobias, and Garratt, 1994), an algorithm in Statistical Analysis System (SAS), to search for an optimal design. Following the D-optimality condition, nine choice sets were generated (de Aguiar et al., 1995) for the mass survey.

Challenges for design case in the Discrete Choice Experiment

One of the challenges that we faced was to set up a survey suits the 'cognitive demands' of a respondent. If the survey was too long, or too complicated, not only the response rate would be low, the data collected would also have a lower quality due to fatigue in making choices on the survey. To resolve the problem, the wording of the surveys was kept as simple as it could be. Moreover, only 3 choices in each choice set are presented in the survey

in order to reduce the complexity for the ranking task. One of the samples is shown as Figure 3 and the choice sets are summarized in Table 2.

Respondents from the mass survey were required to answer their order of preference among the 3 alternatives in each choice set within the questionnaire. This setup is similar to the actual situation of the existing postgraduate programme in the market as the most preferred choice would indicate the maximal utility. According to Green and Srinivasan (1990) and Raghavarao and Wiley (2006), the impact of each attribute to the ranking can be estimated.

Figure 3: Sample of a choice set

Considerations for a postgraduate programme	**Option 1**	**Option 2**	**Option 3**
Reputation of a university	Reputable university	Very reputable university	Less reputable university
Internationalization of the student profile	Most students are locals	Most students are foreigners	Partly are locals and partly are foreigners
Practicality of the postgraduate programme	Course content is very theoretical	Course content is very practical	Course content is very theoretical
Relevancy of the postgraduate programme to future economies	Some courses provide up-to-date content to future economies	Most of the course follows closely to traditional practice	Most of the courses provides up-to-date content to future economies
Cost of the postgraduate programme	HK $ 150,000	HK $ 150,000	HK $ 200,000
Location of its campus	More than 45 minutes travelling time from home	Walking distance from home	Walking distance from home
Please indicate your ranking (1: most preferred; 2: medium; 3: least preferred)			

Table 2: Summary of choice sets

Set	**Choice**	**Reputation**	**Student profile**	**Programme Practicality**	**Programme nature**	**programme cost**	**Location of its campus**
1	1	Reputable university	very local	very theoretical	Some courses provide up-to-date content to future economies	HK $ 150,000	More than 45 minutes travelling time from home
1	2	Very reputable university	very international	very practical	Most courses follow closely to traditional practice	HK $ 150,000	Within walking distance from home
1	3	Less reputable university	between local and international	very theoretical	Most courses provide up-to-date content to future economies	HK $ 200,000	Within walking distance from home
2	1	Very reputable university	between local and international	very theoretical	Most courses provide up-to-date content to future economies	HK $ 200,000	More than 45 minutes travelling time from home
2	2	Less reputable university	very local	both theoretical and practical	Some courses provide up-to-date content to future economies	HK $ 150,000	Within walking distance from home
2	3	Reputable university	between local and international	both theoretical and practical	Most courses follow closely to traditional practice	HK $ 250,000	30 to 45 minutes travelling time from home
3	1	Reputable university	between local and international	very practical	Most courses follow closely to traditional practice	HK $ 250,000	More than 45 minutes travelling time from home
3	2	Less reputable university	between local and international	very theoretical	Most courses follow closely to traditional practice	HK $ 150,000	Within walking distance from home

3	3	Very reputable university	very local	both theoretical and practical	Some courses provide up-to-date content to future economies	HK $ 200,000	30 to 45 minutes travelling time from home
4	1	Reputable university	very local	very theoretical	Most courses follow closely to traditional practice	HK $ 200,000	30 to 45 minutes travelling time from home
4	2	Very reputable university	very international	both theoretical and practical	Most courses provide up-to-date content to future economies	HK $ 250,000	Within walking distance from home
4	3	Very reputable university	between local and international	very practical	Some courses provide up-to-date content to future economies	HK $ 150,000	More than 45 minutes travelling time from home
5	1	Less reputable university	very local	both theoretical and practical	Most courses provide up-to-date content to future economies	HK $ 250,000	More than 45 minutes travelling time from home
5	2	Very reputable university	between local and international	both theoretical and practical	Most courses provide up-to-date content to future economies	HK $ 150,000	30 to 45 minutes travelling time from home
5	3	Reputable university	very international	very practical	Some courses provide up-to-date content to future economies	HK $ 200,000	Within walking distance from home
6	1	Less reputable university	very international	very theoretical	Some courses provide up-to-date content to future economies	HK $ 250,000	More than 45 minutes travelling time from home
6	2	Reputable university	between local and international	both theoretical and practical	Some courses provide up-to-date content to future economies	HK $ 200,000	Within walking distance from home
6	3	Less reputable university	very local	very practical	Most courses follow closely to traditional practice	HK $ 150,000	30 to 45 minutes travelling time from home
7	1	Very reputable university	very local	very theoretical	Most courses follow closely to traditional practice	HK $ 250,000	Within walking distance from home
7	2	Reputable university	very international	both theoretical and practical	Most courses follow closely to traditional practice	HK $ 150,000	More than 45 minutes travelling time from home
7	3	Less reputable university	very international	very practical	Most courses provide up-to-date content to future economies	HK $ 200,000	30 to 45 minutes travelling time from home
8	1	Reputable university	very local	very practical	Most courses provide up-to-date content to future economies	HK $ 250,000	Within walking distance from home
8	2	Less reputable university	very international	both theoretical and practical	Most courses follow closely to traditional practice	HK $ 200,000	More than 45 minutes travelling time from home
8	3	Very reputable university	very international	very theoretical	Some courses provide up-to-date content to future economies	HK $ 250,000	30 to 45 minutes travelling time from home
9	1	Very reputable university	very local	very practical	Most courses follow closely to traditional practice	HK $ 200,000	More than 45 minutes travelling time from home
9	2	Less reputable university	between local and international	very practical	Some courses provide up-to-date content to future economies	HK $ 250,000	30 to 45 minutes travelling time from home
9	3	Reputable university	very international	very theoretical	Most courses provide up-to-date content to future economies	HK $ 150,000	30 to 45 minutes travelling time from home

Mass Survey

A mass survey was conducted in the period from December 2018 to May 2019. The target population was the prospective applicants to a postgraduate programme offered by some universities in Hong Kong. Each participant received a questionnaire with a choice set similar to Figure 3 and was asked to rank among 3 alternatives of postgraduate programmes. As shown in Table 3, three hundred and thirty-nine bachelor graduates who are the potential applicants to a postgraduate programme had participated in the mass survey.

Table 3: Demographic Profile

		# of respondents	percentage %
Total		**339**	**100**
Sex	Male	180	53.1%
	Female	135	39.8%
	Not provided	24	7.1%
Age	Below 21	3	0.9%
	21-30	122	36.0%
	31-40	158	46.6%
	41 or above	49	14.5%
	Not provided	7	2.1%

Management Position	CEO/Senior management	72	21.2%
	Middle management	172	50.7%
	Junior staff	39	11.5%
	Front line staff	23	6.8%
	Not provided	33	9.7%
Years in current organization	0-4	152	44.8%
	5-9	105	31.0%
	10 or above	69	20.4%
	Not provided	13	3.8%
Income group	Below HK $20,000	38	11.2%
	HK $20,000-40,000	138	40.7%
	HK $40,000-60,000	100	29.5%
	HK $60,000 or above	38	11.2%
	Not provided	25	7.4%

ANALYSES AND FINDINGS

To analyze the respondents' preferences on postgraduate programmes, a mathematical model described by Train (2003) as shown in equation (1) was used. This equation assumes each applicant *a* (where *a* = 1 to 339, given there are 339 respondents) has his/her own utility function for a postgraduate programme *p* (where *p* =1, 2, or 3, given there are 3 choices) in a choice set *t* (where *t* = 1 to 9, given there are 9 choice sets). The utility function U_{apt} is derived by *k* attributes (where *k* = 1 to 6, given there are 6 attributes for each choice) and is stated below.

$$\boldsymbol{U_{apt} = V_{apt} + \mathcal{E}_{apt} = \sum_{k=1}^{6} \beta_{akt} X_{kpt} + \mathcal{E}_{apt}} \quad -(\mathbf{1})$$

This utility function consists of deterministic utility, $\boldsymbol{V_{apt}}$, and random utility, $\boldsymbol{\mathcal{E}_{apt}}$ with a random disturbance. The deterministic utility includes marginal utility of each attribute *k*, denoted by $\boldsymbol{\beta_{akt}}$, and different levels of each attribute *k* for the available choice *p* by $\boldsymbol{X_{kpt}}$ in the choice set *t*. Among various discrete choice models, we adopt an ordered logit model to estimate applicants' weights of attributes.

In this model, $\boldsymbol{\beta_k}$ is set to a vector that follows the multivariate normal distribution with mean $\boldsymbol{b_k}$ and covariance matrix $\sum_k$. Furthermore, a rank-ordered logit model uses rank data that provides a sequence of preference. From these assumptions, the likelihood function of formula (1) could be derived from the individual probabilities $\boldsymbol{\pi_{pa}}$ as shown below where *p* is the rank of the choice for the applicant *a*. According to Shin et al. (2016), the $\boldsymbol{\beta}$ s will be estimated by maximizing the likelihood function as indicated in equation (2).

$$\boldsymbol{L(\beta_k | rankings) = \prod_{a=1}^{339} \pi_{1a} \pi_{2a} \pi_{3a}}$$

$$\boldsymbol{= \prod_{a=1}^{339} \prod_{p=1}^{3} \frac{e^{\alpha_p + \beta_{ak}}}{\sum_i e^{\alpha_p + \beta_{ai}}}} \quad -(\mathbf{2})$$

Table 4: Estimation of the impact from the attributes for postgraduate degree ranking

Analysis of Maximum Likelihood Estimates						
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	p-value	MWTP ($HKD)
α_1	1	-0.8411	0.0749	126.0973	<.0001	-
α_2	1	0.8944	0.0750	142.1250	<.0001	-
Reputation	1	1.1431	0.0818	195.5234	<.0001	96,075
Practicality	1	0.3838	0.0760	25.4904	<.0001	32,258
Focus on future economies	1	0.2763	0.0760	13.2165	0.0003	23,222
Cost	1	-0.5949	0.0776	58.7704	<.0001	-50,000

Note: Mean and standard error at 5% level.

Based on data collected by the three hundred and thirty-nine (339) respondents, the estimates for each attribute β are shown in Table 4. Accordingly, the significant factors for a popular programme includes reputation of a university (estimate = 1.1431) is the most important attribute for determining the ranking of a programme. The second crucial one is the cost of a programme (estimate = -0.5949). The estimates for the cost of a programme is negative because the lower the cost of a programme, the higher the preference of its ranking. Next is the practicality of a programme (estimate = 0.3838) and the fourth one is the focus on future economies (estimate = 0.2763). The remaining 2 attributes, students' mix of nationality and the distance to the campus, are insignificant. Both are with *p* value greater than 0.2.

For the sensitivity analysis, we introduce a concept of marginal willingness to pay (MWTP). It refers to the amount of payment needed to compensate for the change of attribute *k* by 1 unit. It is also called compensation value in micro-economic theory. The computation of MWTP would induce the monetary value of an attribute as shown in equation 3. It is equivalent to a ratio of (i) the rate of change of utility with respect to the change of attribute *k*; against (ii) rate of change of utility with respect to the change of price. It is effectively the ratio between 2 regression coefficients.

$$\text{MWTP of attribute } k \stackrel{\text{def}}{\equiv} \text{MWTP}_k \stackrel{\text{def}}{\equiv} \frac{\frac{\partial U}{\partial X_k}}{\frac{\partial U}{\partial p}} \stackrel{\text{def}}{\equiv} \frac{U_{X_k}}{U_p} \quad \text{- (3)}$$

Table 4 summarizes the marginal willingness-to-pay for the attributes. For example, if we wish to calculate the MWTP for reputation, which is the ratio of utility change due to the change of "1 unit" reputation with the cost. By substituting our finding into equation (3), we have the following.

$$\text{MWTP of reputation} = \frac{\frac{\partial U}{\partial X_k}}{\frac{\partial U}{\partial p}} = \frac{1.1431/1}{0.5949/50000} = \$\,96{,}075$$

In addition to the parameter estimate of mean and variance of the marginal utilities β_k, rank-ordered logit model, which is defined as log of odds as shown in equation 4, would also be used to derive the ranking of each attribute for a postgraduate programme.

$$\text{logit}(p) \stackrel{\text{def}}{=} \log\left(\frac{p}{1-p}\right) \quad \text{- (4)}$$

The maximum likelihood estimates for βs, or equivalently maximizing the log likelihood function, are subjected to equations (5) as below:

$$\text{logit}(p_1) = \alpha_1 + \beta' X$$

$$\text{logit}(p_1 + p_2) = \alpha_2 + \beta' X$$

$$p_3 = 1 - p_1 - p_2 \quad \text{- (5)}$$

where p_1 = Probability of rank 1; p_2 = Probability of rank 2; p_3 = Probability of rank 3.

Given the estimates of attributes, we can deduce the probability of rankings from the corresponding logit functions (Agresti, 2010).

$$p_1 = \frac{e^{\alpha_1+\beta X}}{1+e^{\alpha_1+\beta X}}$$

$$p_2 = \frac{e^{\alpha_2+\beta X}}{1+e^{\alpha_2+\beta X}} - p_1$$

$$p_3 = 1 - p_1 - p_2 \quad \text{- (6)}$$

From equations (6), the "expected ranking score" is interpreted as score 3 as top rank, score 2 as middle rank, and score 1 as the lowest rank. These scores were used to estimate the rank of a postgraduate programme.

$$\textit{Expected ranking score} = 3p_1 + 2p_2 + p_3 \quad \text{- (7)}$$

As an illustration, for a postgraduate programme hosted by a very reputable university (reputation = 1), with a very theoretical focused programme content (practical = -1), given its neutral relevancy of the postgraduate programme to future economies (update = 0), and the tuition fee of the programme is set as HK $200,000 (cost = 0). Referencing Table 4 and applying equations 6 and 7, we have the following expected ranking score of 2.32, which is circled with dashed line in Figure 4.

$$p_1 = \frac{e^{\alpha_1+\beta X}}{1+e^{\alpha_1+\beta X}}$$

$$= \frac{e^{-0.8411+1.1431(1)+0.3838(-1)+0+0}}{1+e^{-0.8411+1.1431(1)+0.3838(-1)+0+0}}$$

$$= 0.4796$$

$$p_2 = \frac{e^{\alpha_2+\beta X}}{1+e^{\alpha_2+\beta X}} - p_1$$

$$= 0.3598$$

Expected ranking score = $3p_1 + 2p_2 + p_3$

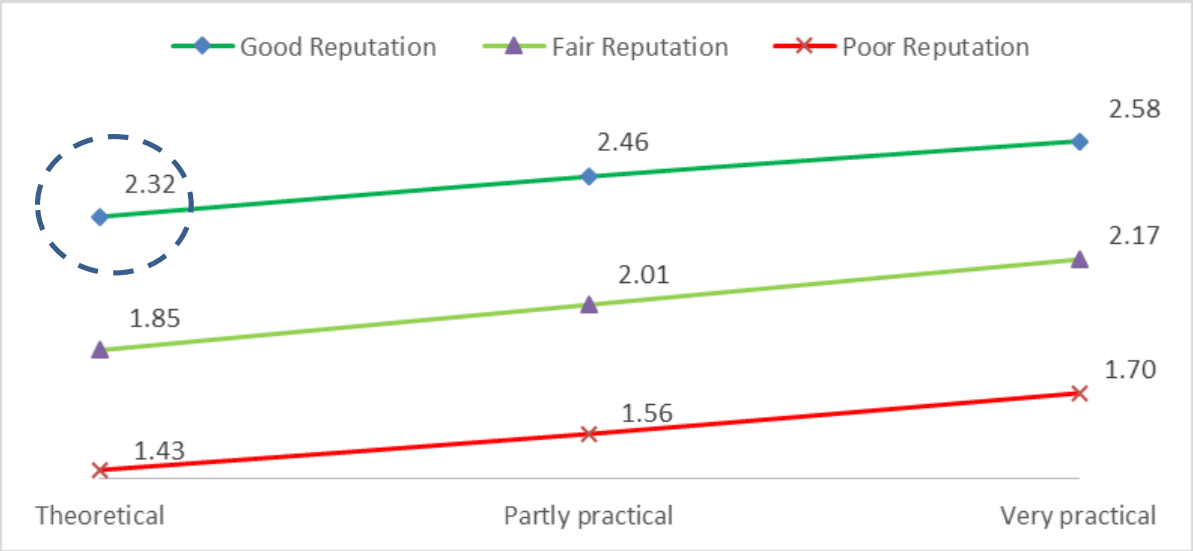
$$= 3(0.4796) + 2(0.3598) + (1-0.4796-0.3598) = 2.32$$

Sensitivity Analysis

Reputation of a university versus practicality of a postgraduate programme

Sensitivity Analysis is used to analyze how the different values of two attributes affect the ranking a postgraduate programme under certain specific conditions. In this study, the expected ranking score for different attributes of a postgraduate programme is estimated. First, we compare the effects of 'reputation' versus 'practicality' by keeping 'cost' and 'relevancy of the postgraduate programme to future economies' at middle value. That is the latter two attributes are set as 0. As shown in Figure 4, the findings depict the practicality of a programme could compensate the reputation of a university.

Figure 4: reputation of a university versus practicality of a postgraduate programme

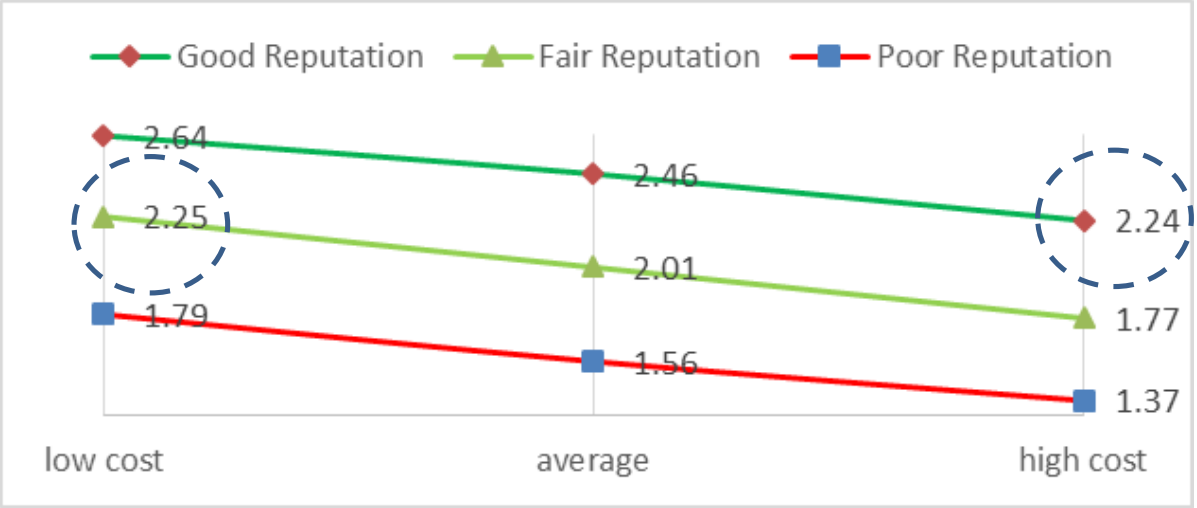


Reputation of a university versus cost of a postgraduate programme

Second, the effects of 'reputation of a university' versus 'the cost of a postgraduate programme' by keeping both

'practicality' (practical = 0) and 'relevancy of the postgraduate programme to future economies' (focus on future economies = 0) at middle value is investigated. As shown in Figure 5, the expected ranking score for a good reputable university with higher tuition fee (ranking score = 2.24, which is circled in dashed line) is comparable with that for a fair reputable university with a lower tuition fee (ranking score = 2.25, which is circled in dashed line). As such, this indicates that a substitution effect between tuition fee and the reputation of a university exist.

Figure 5: reputation of a university versus cost of a postgraduate programme



DISCUSSION

Based on the findings, the reputation of a university, cost of a programme, practicality of a programme and whether the programme focuses on future economies are considered the top four most important attributes. On the contrary, the location of the university campus and internationalization of the student profile are not as significant as in determining the preference of a postgraduate programme. It can be explained by that Hong Kong is a small city, the travelling time from one place to another is relatively short as Hong Kong has an efficient mass transit railway system and other public transportation means. Hence, location is not as critical as it seems when consider choosing a postgraduate programme in a university. Moreover, it is not uncommon to see many foreigners in Hong Kong. Some foreigners could even be the second or third generation residents who were born and grew up in Hong Kong and they can speak Cantonese, a local language in Hong Kong, fluently. People in Hong Kong are quite used to the diversity and international culture.

After all, the reputation of a university is essential and crucial. The practicability of the programme content is also important. People with a postgraduate degree could be more attractive in the job market with better career prospect. Furthermore, it is logic and understandable that potential applicants who are willing to trade off from enrolling to a lesser reputable university for a lesser programme cost. This study may provide new insights for university to take care their postgraduate programme design.

Limitation & Future Research

There are some drawbacks using DCM as this methodology generally supports only limited number of attributes. Because of that, all the important attributes

must be identified and well defined from the beginning before a mass survey is rolled out. Moreover, DCM involves complex statistical techniques and the cost of conducting a large-scale DCM survey is relatively expensive. Furthermore, DCM typically does not have a set of standard guidelines and requirements for researchers to follow as real life postgraduate programmes may vary in real life. It is difficult to come up with a perfect discrete choice experiment.

CONCLUSION

As aforementioned, having a degree of a postgraduate programme has become an indispensable asset for mid to high-level managers to compete in the job market. It is common to find that experienced professionals with a postgraduate degree would move up the corporate ladder relatively faster than those who do not. In reality, it is not difficult to discover many high level managers in an organization have already mastered at least one postgraduate degree if not more nowadays. To catch this trend, many universities in Hong Kong have offered various postgraduate programmes and competition among the universities to attract good potential applicants are getting severe. This study intends to help educational institutions to increase students' enrollments by designing a better postgraduate programme. Leveraging on the Discrete Choice Experiment, we examined how the six essential attributes would make an impact on the ranking of a postgraduate programme. Our findings highlight the reputation of the university, practicality of the programme, focuses on future economies and cost of a programme are important factors for potential applicants to choose a postgraduate programme in Hong Kong. Our findings are relevant to Hong Kong students who are interested in continued education and life-term learning. This research would be extended if the respondents are those foreign students with interest in the postgraduate programme in Hong Kong.

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