

A CASE STUDY: USING CHOICE EXPERIMENT IN AN OPEN AND DISTANCE LEARNING IN MALAYSIA

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Abstract

There are approximately 62 private higher education providers in Malaysia as on May 2014. Among them, there are several institutions offer the open and distance (ODL) mode of teaching and learning pedagogy. Due to the ODL flexibility mode, there has been quite a stir of competition in the education industry. Learners of ODL tend to be more challenging to fulfill their needs as they have other commitments in life, hence the ODL mode to be chosen. Therefore, the ODL education institution need to able to read and provide the necessary needs to these learners. The aim of this study is to investigate the attributes that contributes to choosing an ODL private higher education institution in Malaysia and to explore the consumer behavior in the area of student choice, and consumers' willingness-to-pay price. Although there are studies on the attributes that influence student choice of a university, but has failed to use the choice experiment theory to examine the attributes that influence choice of course particularly an ODL mode. The sample population was 320 using face-to-face interview. The results would be able to introduce the right marketing strategy for the institution in Malaysia.

Keywords: *Choice experiment, attributes, open and distance learning (ODL), willingness-to-pay (WTP), marginal rate of substitution (MRS)*

Introduction

The nature of online learning requires high commitment from the learners, especially self-managed learning and collaborative online learning. Over the years, there has been rapid growth on the dependency of information technology for open and distance learners around the world. In ODL mode, the absence of traditional classroom face-to-face interaction between the learners and the tutors is substituted with online forum. As the demand for tertiary education via open distance learning has increased over the last decade especially from among working adults, it is important that educational institutions take pro-active steps to ensure they meet the attributes that the learners are expecting to get from the institution. Tertiary education is arguably a high-involvement product and this represents a substantial investment in monetary and temporal terms. Hence, prospective education consumers would carefully examine the options available in the market. Educational marketers must study the reasons why students select a particular tertiary institution from a large number of alternatives. Apart from that, how students come to a purchase decision and the attributes they are appraising for their options in education institutions is an important question. The objectives of this study are (i) to determine the attributes that prospective students are willing to pay in selecting the education provider; and (ii) to evaluate the prospective students' socio-economic and attitudes on their choice of education provider in Malaysia.

Literature Review

The trend in education for the past decade has been transformed into a more student-centred environment. Vygotsky (1978) highlighted that the idea of learning resembles a type of "social activity". This student-centred concept is based on the constructivist perspective of learning, whereby students construct their own knowledge based on their experience gained (Jonassen, 1991). Therefore, marketing of higher education institutions is moving toward student orientation. According to Brown (1991), education consumers are to select those education institutions that match their selection attributes academically, socially and financially. Plank and Chiagouris (1998) reported that there are five attributes that plays a role in education provider decision making, namely:

- (i) Academic programs offered;
- (ii) Academic programs available;
- (iii) Perceived good job after graduation;
- (iv) Financial aid; and
- (v) Value for money.

Meanwhile according to Webb et al (1998), there are 10 suggesting criteria. There are:

- (i) Academic programs available;
- (ii) Academic reputation of the institution;
- (iii) The marketability of the degree conferred;
- (iv) Faculty contact time;
- (v) Accreditation;
- (vi) Campus employment;
- (vii) Financial aid;
- (viii) Placement reputation;
- (ix) Completion time; and
- (x) Library size.

On another study, 6 criteria has identified in the service quality in higher education. There are programs issues, academic reputation, physical aspects, career opportunities, geographical location of the institution, and duration of studies (Joseph et. al., 2005).

Use values are associated with potential, current or future use of a good or service directly or indirectly. Use value is the value that accrues to individuals through direct consumption of the rendered services. The relevant value can be measured by the fees paid every semester, or, if appropriate data are available, by consumer surpluses estimated.

Estimating the real value of indirect use values may be difficult and mostly ignored in the management decisions. The non-use or passive use values experienced by individuals are not reflected in market processes as they are derived from attributes of ODL education. There are 3 categories of passive-use value that are relevant to ODL education: (i) existence value: individuals value education because it is important; (ii) altruism value: individuals wish to pay for education institutions for certain attributes provided, open the option that they may consume their services in the future; and (iii) request value: individuals wish to pass on the education services to future generations.

Choice Experiment (CE)

CE is the most recently used approach where it was mostly used to study the tradeoffs between the characteristics of transport projects and private goods (Alpizar et. al., 2001). CE has recently been applied widely to non-market valuation of environmental goods and services, resource economics and health economics (Bateman et. al., 2002; and Alpizar et. al., 2001). CE is suitable for the purpose of valuation of non-market goods (Hanley and Barbier, 2009). CE involves designing different options with different levels of attributes and characteristics. The respondents were then asked to choose their preferred options based on the given

options in the surveys. A “status quo” term is always used as a baseline in the questionnaire in order to achieve welfare measure that is consistent with the economic theory (Adamowicz et al. 1998; Layton and Brown, 1998).

Methodology

A total sample of 320 was collected in year 2014 from several ODL higher education learners in Malaysia. The attributes and its levels are needed to be defined carefully and as precisely as possible as well. Therefore, the attributes are chosen based on previous studies on the industry in the market today. Other than that, the level for each attributes is determined by interviewing several experts in the ODL institution itself.

CE estimates the Willingness-To-Pay (WTP) value based on the estimated β_i values from equation $V_{ij} = \beta_1 X_{1j} + \beta_2 X_{2j} + \dots + \beta_i X_{ij}$. The estimates β_i value, which implies the effect on the utility of a change in each, attributes level. For example, β_1 shows the effect on utility of a change in attribute X_1 (Hanley and Barbier, 2009). WTP is the price or cost attribute and the marginal change in an attribute is typically derived by dividing the β_a (value of each non-monetary attribute) by β_c (value of the price attribute). The Marginal WTP, or $MWTP = \frac{\beta_a}{\beta_c}$, this value for any attributes, other than the price is called the implicit price or marginal rate of substitution (MRS) (Hanley and Barbier, 2009).

The Research Objectives

The specific objectives of this study is to evaluate the respondents’ socio-economic and attitudes on the highest willingness-to-pay for ODL education attributes in Malaysia.

Definition of Attributes’ Levels

The identification of attributes and the levels was obtained from past studies and several officials from various education institutions and the “status quo” term should be included as well. The selected attributes and levels for are shown in Table 1.

Attribute	Attribute Levels
Programs offered	Less satisfactory* Satisfactory Very satisfactory
Facilities offered (hostel, internet, library, laundries etc)	Not satisfactory* Less satisfactory Satisfactory
Reputation of the institution	Less satisfactory* Satisfactory Very satisfactory
Total amount paid per semester (without accommodation)	RM1850* RM2050 RM2250 RM2450

* Status quo or current situation of the ODL education provider institutions in Malaysia.

Programme Offered

The number of demanded and reputable programs offered. The options of programs offered are as follows:

- (a) *Less satisfactory*: Did not meet the programs and syllabus needed and asked by the prospective students
- (b) *Satisfactory*: Fairly meet the programs and syllabus needed and asked by the prospective students.
- (c) *Very satisfactory*: Able to meet the programs and syllabus needed precisely by the prospective students.

Facilities Offered

Facilities offered refer to the various offered by the institutions to its students for example, internet coverage, library, the security of hostel and laundries.

- (a) *Not satisfactory*: Fail to meet all the needed services by the prospective students for example, weak internet connection, small library, dirty and no security for the hostel and no laundries service.
- (b) *Less satisfactory*: Certain facilities fail to meet the expectations of prospective students.
- (c) *Satisfactory*: Able to meet all the needed services by the prospective students.

Reputation of the Institution

Reputation and image of the institution refers to establishment and image of the institution over the years of quality service rendered.

- (a) *Less satisfactory*: Not able to project reputable and established institutions over the years in the education industry.
- (b) *Satisfactory*: Fairly able to project reputable and established institutions over the years in the education industry.
- (c) *Very satisfactory*: Able to project very reputable and established institutions over the years in the education industry.

Results and Discussions

A summary of the socio-economic profile of respondents is presented in Table 1. The total number of respondents is 320. The respondents' age is between 28 years old to 72 years old, with mean 35 years of age.

Table 1: Socio-economic Profile of the Respondents

Variable	Frequency	Percentage (%)	Mean
Age (year)			34.705
Income per annum			38863.55
Gender			
Male	118	36.9	
Female	202	63.1	
Race			
Malay	212	66.3	
Chinese	61	19.0	
Indian	36	11.3	
Others	11	3.4	
Marital Status			
Single	136	42.5	
Married	163	50.9	
Others	21	6.6	

The distributions of the sampled respondents' gender are 36.9% and 63.1% male and female respectively. Out of the respondents, 66.3% are Malay, 19% are Chinese, 11.3% are Indian and only 3.4% are other races. As for the marital status, 42.54% of them are currently single, 50.9% of them are married and 6.6% of them are others such as widowed or divorced.

Respondents' Perception on ODL Education

Respondents were asked about their perception on ODL education as well. There were seven questions related to this aspect from Q15 to Q21. Refer to Table 2 for the questions in the questionnaire and Table 3 for the results:

Table 2: Questions Regarding Respondents' Perception on ODL Education

Q15. I am glad ODL education choice is available to me
Q16. The present ODL education attributes should be available for my grandchildren
Q17. ODL education is the future of learning
Q18. If things continue on their present course, we will soon experience a major touch in education
Q19. I do not need to care about education attributes

Table 3: Respondents' Perception towards ODL Education

Question	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
	%	%	%	%	%	
Q15	0.2	4	30	42.4	23.4	3.85
Q16	1.8	6.8	25	42.2	24.2	3.81
Q17	1.2	5.6	27.8	39.4	26	3.84
Q18	4.4	5.2	23	43	24.4	3.78
Q19	0.2	4	28	45.4	22.4	3.79

Table 3 shows most of the respondents do feel that ODL education is important and is the future of education and they are glad that ODL education are available for them with mean value of 3.85, 3.81 and 3.84 respectively. Most of the respondents do concern about ODL education attributes.

The analysis will start with basic model followed by basic WTP for the ODL attributes identified by the respondents. Table 4 shows a brief descriptive analysis of the main attributes in the choice experiment.

Table 4: Descriptive Analysis of Main Attributes

Variable	Frequency (%)	Expected Sign
PROG (Programme Offered)		
Less Satisfactory	28.05	+
Satisfactory	28.52	
Very Satisfactory	43.43	
FAC (Facilities Offered)		
Not Satisfactory	24.86	
Less Satisfactory	25.66	+
Satisfactory	49.48	
REP (Institution Reputation)		
Less satisfactory	38.2	
Satisfactory	24.19	+
Very Satisfactory	37.61	
FEES (Fees per semester)		
RM1850	10.64	-
RM2050	45.26	
RM2250	23.94	
RM2450	20.16	

Different options were presented to respondents, distinguished by their attributes and associated cost. Option A and Option B entailed various combinations of better ODL education attributes with higher fees per semester, while Option C is always weak ODL education attributes (current situation) and therefore with the minimum fees of RM1850 per semester. The general econometric model was derived as below:

$$U = \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon_0$$

where $\beta_1, \beta_2, \dots, \beta_k$ are related coefficients on the main attributes X_1, X_2, \dots, X_k .

Basic Multinomial Model

For basic multinomial model, the respondents were expected to value those levels of programme offered, facilities offered and institution reputation that resulted in higher quality and bring higher utility. Table 5 shows the basic multinomial model with signs of all the attributes.

Table 5: Basic Multinomial Model

Variables	Coefficients (β)	Standard Error
PRO	0.63028678	0.04264956**
FAC	0.53478455	0.03948460**
REP	0.67477164	0.03140176**
FEES	-0.09854782	0.01256524**

**Significant at 1%

Table 4 shows that all the attributes sign are in agreement with the theories. Programme offered (PRO), Facilities Offered (FAC) and Institution Reputation (REP) are positive in sign refers to higher quality of these attributes the higher the willingness to pay. Meanwhile, negative sign for FEES shows that the higher the fees per semester, the lower the willingness to pay. Several approaches to improve the model fit and estimating models, which are more accurate. Each attribute, except fees in term of monetary value (FEES) is divided into three levels and recoded as dummy variables (0, 1). Status quo or level one as base line and level two and three implied medium and high level of each attribute. Attribute levels are dummy coded which means that they are set to 1 if the corresponding level is present, and equal to 0 otherwise (Table 6). In all models, base level is the first level of each attribute.

Table 6: Attributes and Attribute Levels

Attribute	Attribute Level	Description
PROG (Programme Offered)	PRO1	1 = Programme offered is less satisfactory 0 = otherwise
	PRO2	1 = Programme offered is satisfactory 0 = otherwise
	PRO3	1 = Programme offered is very satisfactory 0 = otherwise
FAC (Facilities Offered)	FAC 1	1 = Facilities offered is not satisfactory 0 = otherwise
	FAC 2	1 = Facilities offered is less satisfactory 0 = otherwise
	FAC 3	1 = Facilities offered is satisfactory 0 = otherwise
REP (Institution Reputation)	REP1	1 = Institution reputation is less satisfactory 0 = otherwise
	REP2	1 = Institution reputation is satisfactory 0 = otherwise
	REP3	1 = Institution reputation is very satisfactory 0 = otherwise

Marginal Willingness-to-pay

The MWTP is calculated by computing the marginal rate of substitution between the attribute of interest and the cost factor. According to Hanley & Barbier (2009), this value ratio can also be identified between non-monetary elements of utility (attribute tradeoffs) is known as implicit price (IP). As an example, one of the attribute is programme offered dividing the value of this attribute by value of price, will show the average willingness-to-pay of respondents to increase the quality of programme offered from the current level. The marginal value of the conservation attributes is estimated using the following formula:

$$\text{Marginal value} = - \frac{\beta_{\text{attribute}}}{\beta_{\text{monetary variable}}}$$

Table 7: Marginal Value for Different Attribute Levels

Variables	Marginal Value	Standard Error
PRO2	1960.50646420	1.63505617**
PRO3	1960.76151350	1.50245622**
FAC2	1920.11114643	1.22343202**
FAC3	1896.66538605	0.81297655**
REP2	1907.75237945	0.74814242**
REP3	1980.20074490	2.07267003**

**Significant at 1%

Wald procedure in LIMDEP, NLogit 4.0, was employed to estimate the WTP value of the attributes. The results is reported in Table 7. Refer to Table 7, the Marginal Rate of Substitution (MRS) between less satisfactory and satisfactory for programme offered in the logit model is RM1960.50 while an improvement for programme offered to very satisfactory level is RM1960.80 per semester, indicating respondents in this study do prefer the best condition (very satisfactory level) of programme offered. Meanwhile, there is a lower need for better quality in the facilities offered by the respondents for this attribute. There is a fall from less satisfactory to satisfactory level for facilities offered; RM1920.11 to RM1896.70 per semester. While respondents have the highest WTP for institution reputation where from satisfactory to very satisfactory level; with RM1907.75 to RM1980.20 per semester. This shows that the respondents in this study do value the institution reputation the most.

Conclusion

From the universities' perspective, it is important to understand the costs and benefits received, as they often have a strong influence on how to market its institutions; investing in the reputation of ODL education institution is vital based on the results of this study. This may be due to the fact that ODL is still relatively a new learning mode and environment to Malaysia although ODL has been in the market for more than 10 years. If learners stand to gain more from a particular university program, they well may be supportive on the ODL mode of learning. The findings of this study suggested that the economic value of ODL learning in Malaysia is substantial and respondents are generally supportive and willing to pay to study in ODL mode.

Ideally, the result will ensure Open University Malaysia remains uniquely a provider of higher education via ODL with the ability to narrow the digital divide in education. Meanwhile, its current philosophy of creating new and innovative courses to add on to its existing list of programs should not be neglected, even more so it should be balanced with practical and theoretical input. Indeed, it will live up to its policies of widening access to education, providing lifelong learning opportunities and giving everyone a second chance for education; a university that thrives on the preservation of knowledge and the socialisation of citizens.

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