Assessing Factors Influencing Students' Choice of Malaysian Public University : A Rasch Model Analysis

Ahmad Zamri bin Khairani[*] **, Nordin bin Abd. Razak**

School of Educational Studies, Universiti Sains Malaysia, 11800, Penang, Malaysia

Abstract The purpose of this study is to calibrate factors that influence students in their choice of public university. The factors are university's image, course offered, facility provided and university's environment. The participants for this study are 1584 prospective students from pre-university institutions. The study employed a 32-items self-developed questionnaire measuring the mentioned factors. The Rasch Model analyses were used because it provides the researcher with richer interpretations of the data collected. Results showed that the participants endorsed university's image as the most influential factors followed by university's environment, facility provided and course offered by the university. Nevertheless, the difference between calibration measures between the factors were small. Thus, the present study suggest that all factors are considered equally important and should be considered as one unitarian factors rather than a few different factors.

Keywords Students' Choice of University, Malaysian Public University, Rasch Model Analysis

1. Introduction

The higher education in Malaysia has been progress positively from the initiative taken by the government to promote Malaysia to become higher education hub in the region. The initiative is also driven by the aim to accommodate 40% of the students to higher education in order to achieve the bigger target, that is, to become a developed nation by 2020[1]. According to[2], one of the important effects of such initiatives is the increase of students' enrolment at tertiary level. As a result, higher education institutions (HEIs) are mushrooming to cater to the need of the students. The trend is considered positive since more places are offered to the students. In addition, the institutions also offered an affordable tertiary education compared to overseas such as the United States, the United Kingdom and Australia.

As rightly observed by[3] and[4], managing HEIs is not without pressures and difficulties. Reduced funding from the government as well as fierce competitions between the HEIs affects the capability to attract the best students[5],[6]. In order to response to the challenges, researchers such as[7] have called for better understanding of the choice of prospective students for selecting the HEIs so that primary factors that influence students' choice of HEIs could be identified .

* Corresponding author:
ahmadzamri@usm.my (Ahmad Zamri bin Khairani)

1.1. Overview of Higher Education in Malaysia

Malaysia's HEIs include public and private universities, private higher educational institutions, polytechnics and community colleges with enrolment of more than a million students[8]. In 2011, Malaysia had 20 public universities, 53 private universities and six foreign university branch campuses, 403 active private colleges, 30 polytechnics and 73 public community colleges. There are also various HEIs from the UK, the US, Australia, Canada, France, and New Zealand which offers twinning programmes with private HEIs such as RMIT University, Johns Hopkins University School of Medicine and the Royal College of Surgeons, Ireland. The government also encourages world-class foreign university branch campuses or faculties to be set up in Malaysia. At present, Monash University (Australia), The University of Nottingham (UK), Curtin University (Australia), Swinburne University of Technology (Australia), Newcastle University School of Medicine (UK) and University of Southampton (UK) have set up their campus in Malaysia.

Efforts have been made to enhance the reputation of Malaysian HEIs[8]. Among the initiatives are: (1) improve the world ranking of Malaysian universities; (2) to have 150,000 international students by 2015; (3) to create more 'Malaysian Chairs' at universities abroad; and (4) to collaborate and cooperate with world-renowned universities on research and academic matters. With regards to quality of the HEIs, the Malaysian Qualifications Agency (MQA) has been given the authority to implementation the Malaysian Qualifications Framework that will review performance of all HEIs. In addition, the MQA is also responsible for quality

assurance and the accreditation of courses and other related functions. In terms of provisions, various acts have been tabled, amended and reviewed in order to provide guidelines for the HEIs. Nevertheless, like any other country, HEIs in Malaysia is not without shortcomings. The first and foremost is that limited places at HEIs means limited admission for students to choose their preferred HEIs, and not to mention, their preferred course. Secondly, entry to the HEIs is provided by various foundations such as matriculation and A- level programmes. No common entry examination is available. As such the quality of the students is still an issue. In addition, the link between HEIs and industry player is still weak. It is evident in high unemployment rates (12%) among university graduates[8].

2. Literature Review

2.1. Theoretical Framework

Factors related to students' HEIs choice is considered complex and multistage[9]. Over the years, a few models have been synthesized to help explaining the phenomena. Researchers often relate the models from the perspective of economic, sociological or combination of both perspectives [10]. The economic model (also called the human capital investment model) assumes that students will choose a particular HEI because it offers greater benefits compared to other HEIs. The main disadvantages of this model lies in the fact that even though the benefits are the same, people may make different choices. In contrast, the sociological model undertakes various individual and social factors[10]. According to[11], the model is useful when exploring group diffrence in their choice of HEIs. In the combined model, the factors in both economic and sociological factors are taken into considerations when explaining students' choice of HEIs. Reference[12] and[13] acknowledge that the combined model provides a more comprehensive indicators. This paper will briefly describe three of the comined models, that is, the Hanson and Litten model, the Jackson model and the Hossler and Gallagher model.

The Hanson and Litten model[14] (1982) proposes a three-stage model. The first stage, the preposition stage consists of the desire-to-attend followed by decision-to-atte nd postsecondary HEIs. The model speculates that financial activities are the main considerations at this stage. In the second stage (exploratory stage), the prospective students seeks information regarding the suitable institutions. Peers, parents, school teachers as well as institutions' brochure or flyers play important role at this stage. In the final stage of application/matriculation, students apply and later enroll in the institution that granted admission and provides aids.

The Jackson model[15] discusses the weight of different factors at different stages. It is a three-stage model of preference, exclusion and evaluation. At the preference stage for HEIs choice, the model predicts that students' achievement is the most influential compared to other factors

like students' background and quality of high schools. In the exclusion stage, students gather information on the HEIs. He introduces the concept of *choice set*; where students are likely to apply to a few selected HEIs. At this stage, location is considered the most influential factors, followed by the availability of accurate information, family as well as academic considerations. In the evaluation stage, students will choose the institution mainly based on factors such as job and college attributes as well as the costs associated with both. The model suggests that family and academic background play pivotal roles at this stage In short, it can be seen that the model proposes that the choice is very much influence by social factors in the early stages but economic factors take over at the later stages.

The Hossler and Gallagher model[16] is another three-stage model. In the predisposition stage, students take considerations whether he or she wants to further his or her tertiary education. The model proposes interaction between economic and sociological factors as the determinants for the decision. In the search stage, students gather information related to attributes of the institutions. In the final choice stage of the model, students evaluate the list of institutions and later apply for the best that fits their criteria. The model suggests that the net price, that is, the cost of attending after consideration of financial aid is the most influence factor compared with the list price.

All of the models acknowledge that selection of HEIs is a multistage process. It starts with the question whether to further their tertiary education or not and ends with application for institution that best suits their criteria. It is not too off the mark to say that the models consist of both economic and sociological aspects

2.2. Factors Influencing Students Choice of HEIs

Reference[17],[18] and[19] conclude that there is a wide range of research on HEIs in Malaysia. A study conducted by[20] using sample of undergraduates concludes that reputation of the institution, future graduates' job prospects, nature of the institutions, lower costs, affiliation of the institutions, entry flexibility and institutions' campus environment are six factors that influence the choice of HEIs. Another study by[21] adds large faculty and wide range of facilities to the factors. Meanwhile,[22] find that four important factors namely, qualification of the teaching staff, English usage, English language specialized field and top-notch staff are important among international students. In addition, using the sample of prospective students, parents and undergraduates,[23] suggest that the availability of desired program is considered the most important factors. This factor is also shared from findings by[24] along with other factors such as academic reputation, quality of the faculty/lecturers and financial assistance offered by the HEIs. When it comes to the respective parents, the financial aid offered by the HEIs stands as the most important factors[25]. Nevertheless, as rightly mentioned by[26] it is the image and reputation factors that have tremendous

effects on the choice of HEIs as shared by other researchers[27] and[28].

Even though a wide range of findings are available, there are still gaps for further research. For example, most studies employed undergraduate participants but not the prospective students of the HEIs. One might be speculated that since the undergraduates are already in the HEIs, their perspectives might be influenced by the respective HEIs. More importantly, many of the studies involve private HEIs where competitions are stiff. On the other hands, since it is funded by the government, local public universities are considered themselves in comfort zone especially in terms of effort in recruiting students. However, recent changes in government policies change the scenario. For example, in the 2012 New Year's speech, the Minister of Higher Education announced that five public universities have been given autonomy in administration, human resources, financial and academic management and student intake to encourage excellence among local institutions of higher learning. At the same time, as a result of the government reform, public universities are required to generate their own funding in order to inadequate source from government funding. Thus at present, similar to private HEIs, public universities also compete among themselves to attract the crème de la crème of Malaysian students to enhance the reputation of the universities. Higher reputation is usually associated with various advantages especially the financial aids. As such, new data is needed to provide better of understanding the new paradigm resulted from the changes in both policy and financial supports for public universities.

In light of the preceding discussions, the aim of this study is to provide empirical data on the factors influencing prospective students to choose their public universities, namely, university's image, course offered, facility provided and environment. One of the main reasons to choose only four of the factors is to provide focus on the study since[29] have identified at least 26 factors that influenced students' choice. The factors are considered too broad and do not provide focus. Using the framework of the Rasch Model mentioned in the next section, the present study attempts to calibrate these factors in order to provide richer interpretations of the data regarding the abovementioned factors.

3. Methodology

3.1. Participants

Convenience participants of 1584 prospective university students were used in this study. The participants comprise of 445 males (28.1%) and 1122 (70.8%) with another 17 (1.1%) provide no information. The participants were from pre-university institutions such as matriculation colleges and Form 6 school students (equivalent to A-level) in the northern parts of Malaysia.

3.2. Instrument

This study employs a self-developed 31-items questionnaire that consisted of four constructs namely, University's Image, Course Offered, Facility provided as well as university's Environment. The scale is 5 point Likert-type with the participants' response on a Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree pattern. Table 1 shows sample of items for each construct.

Table 1. Sample of Items

Construct	No of Items	Sample
University's image	8	Q3: I choose this university because of the ranking
Course offered	7	Q3: : I choose this university because the courses are relevant with the work market
Facility provided	10	Q3: I choose this university because of the efficient transportation within campus
Environment	6	Q3: I choose this university because it is safe

3.3. Data Analyses

The Rasch Model framework using WINSTEPS version 3.57 was employed in this study. The Rasch Model procedure transforms the summated test score into interval-scale score called 'measure' through procedure called calibration. The measure is quantified in log-odd or *logits* unit. The use of Rasch Model analysis, offers mathematical framework that provide richer interpretation of the data. Firstly, the model provides an avenue to evaluate the extent to which the data represents a single dimension of construct that is not confounded by other constructs. As rightly observe by[30], the ability of a procedure to isolate one dimension from other dimensions will enable the researcher to understand the meaning of whatever construct been measured. Secondly, like any other modeling techniques, Rasch Model provides users with goodness-of-fit statistics that enable the researcher to have some ideas whether the data collected were consistent with the model's expectations.

In Rasch Model analysis, two important parameters that been modeled together are item difficulty and participants' ability. Item difficulty measure is an estimate of an item's underlying difficulty calculated from the number of participants who succeeds in that item. With regards to Likert type analysis, items with a lot of strongly agrees and agrees responses are considered easy items whereas items with a lot of strongly disagrees and disagrees are calculated as difficult items. Easy items are associated with important items. Participant's ability measure, on the other hand, is an estimate of his or her underlying ability based on performance on a set of items.

In order to employ Rasch Model analysis, two important assumptions must be met. Firstly, the data must meet the unidimensionality assumption, that is, they represent a single construct[31]. In WINSTEPS 3.57, the principal component analysis of the residuals procedure helps identify the existence of second factor that pose a threat to

unidimensionality assumption. Secondly, the Rasch Model requires that the data must fit the model, that is, the degree of discrepancy between observed by the data and the expected by the model is kept to a reasonable level[31]. The infit mean square (MNSQ) and outfit MNSQ provide indications of the discrepancies. This study adopts the range of acceptable fit between 0.6 – 1.4 for both fit indices as suggested by[32]. Consistent with the purpose of this study, this study attempts to calibrate all four factors in terms of their importance. Descriptive statistics (means, standards errors and fit indices) are estimated for the factors.

4. Findings and Discussions

Result from the fit analysis showed that six items (three from university's image and three from facility) did not fit the model's expectations. These items therefore were dropped from further analysis. The participants' reliabilty coefficient (which equivalent to Cronbach's alpha) is .90. The analyses of the remaining 25 items were carried out and the unidimensionality assumption was met. Results from the calibrations of the constructs are shown in the following Table 2. It can be shown that the participants endorse items related to university's image is the easiest to agree with. This, in turn, can be interpreted that university's image is most important factors that influence prospective students to choose public universities. The result is not unexpected since it concurs with previous findings both locally[17] and internationally[33] and[34]. The Rasch Model calibration also suggests that university's environment is the second most important factors followed by facility. Surprisingly, the course offered is considered the least important among the four factors. One important observation is that even though the analyses are able to calibrate the factors according to the participants' preference, ranges differences between the measures are indeed very small (0.169 *logits*). Perhaps it is not too off the mark to speculate that all four factors are considered as equally important when making decisions to enter public university. Analysis from other related studies may provide better understanding with regards to this speculation.

Table 2.   Mean Calibrations of Constructs (in *logits*)

Construct	Measures	Mean	
		Infit MNSQ	Outfit MNSQ
Course offered	0.093	1.07	1.07
Facility provided	0.040	0.91	0.88
Environment	−0.040	0.95	0.92
University's image	−0.076	1.06	1.11

In terms of individual items, Item 17 (Course offered – *I choose this university as the first choice because it provides a lot of co-curricular activities*) is considered the most difficult item (measure = 1.29 *logits*). The participants provide a lot of strongly disagree and agree responses that

indicate the particular item is not an important aspect of their choice). In contrast, Item 14 (Course offered – *I choose this university as the first choice because it offers the course that I am interested in*) is considered the most important aspect since the participants provide a lot of agree and strongly agree responses.

Based from the interval scale property of the items on the calibrated scale, it can be said that Item 29 (Environment *I choose this university as the first choice because it provide a conducive learning environment*) (measure = 0.53 *logits*) is twice as important compared to Item 33 (Environment *I choose this university as the first choice because of the diversity of the students and culture*) (measure = 0.26 *logits*). The capability of Rasch Model to provide interval scale calibration is very important especially to enhance the usability of the instrument. A good instrument should consist of items that are able to provide distinction between important aspects of the construct. In other words, items need to have significant difference in their measure as depicted in Item 29 and Item 33 above. One negative finding of the present study is that some of the items do not provide clear distinction as showed by Item 21 (Facility *I choose this university as the first choice because it has good labs*) and Item 22 (Facility *I choose this university as the first choice because of the easy-to-access internet facilities*) (both with measure of 0.30 *logits*). One of the items needs to be deleted from further analysis to improve the measurement of facility construct.

5. Conclusions

Its limit notwithstanding, the present suggests that all four factors are important for public university decision choice among prospective students. The findings imply that local public unversities should potray themselves as HEIs that provide comprehensive learning environment. The universities should equip themselves not only in teaching and learning area but also other aspects associated with it such as facilities, environment, etc. Gone are the days where a particular university championing itself only in a particular area and hoping students will choose the university based on past traditions. In summary, the public universities need to restrategise their marketing strategies in order to attract and retain students. The findings also provide inputs for government to emphasize on the bettermen of universities and not focus solely on teaching and learning as well as research and development.

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