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Understanding Student Choice Criteria for Selecting an Indonesian Public University: A Conjoint Analysis Approach

Andriani Kusumawati
University of Wollongong

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Description

This research aims to estimate the relative importance the students attach to the factors that influence them to select an Indonesian public university and determine whether there are groups of students for whom different factors were more important. The data was examined using conjoint analysis approach, a widely accepted method for evaluating multiattribute alternatives in marketing. Findings indicate that high school leavers in developing markets, view advice from family, friends, and/or teachers, reputation, and job prospect as the most important factors for selecting a public university. However, two different preference-based segments of prospective students were identified from cluster analysis, and classified into students' 'social networks-based decision' and 'rational decision' segments. Choice simulator was employed with three propositions and the segments were found to have dissimilar preferences. The paper concludes with a discussion of the implications and limitations of the method as well as direction for the future research.

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Understanding Student Choice Criteria for Selecting an Indonesian Public University: A Conjoint Analysis Approach

Andriani Kusumawati

Abstract

This research aims to estimate the relative importance the students attach to the factors that influence them to select an Indonesian public university and determine whether there are groups of students for whom different factors were more important. The data was examined using conjoint analysis approach, a widely accepted method for evaluating multiattribute alternatives in marketing. Findings indicate that high school leavers in developing markets, view advice from family, friends, and/or teachers, reputation, and job prospect as the most important factors for selecting a public university. However, two different preference-based segments of prospective students were identified from cluster analysis, and classified into students' 'social networks-based decision' and 'rational decision' segments. Choice simulator was employed with three propositions and the segments were found to have dissimilar preferences. The paper concludes with a discussion of the implications and limitations of the method as well as direction for the future research.

Introduction

One of the most significant trends in Indonesian higher education since last decade has been the increasing emphasis that has been placed on influencing the higher education institution's (HEI) choice process among prospective students (Maringe 2006; Briggs & Wilson 2007) and to develop new marketing approaches (Simões & Soares 2010). The actions were as a result of declining dependency on government funding (Maringe 2006), intensifying global competition, declining funding and changing demand patterns (Kallio 1995; Jarvis 2000; Gibbs 2001; Veloutsou et al. 2004). The restricted financial environment all impact on a university's endeavours to attract quality students (Mouwen 2000; Espinoza et al. 2002; Haigh 2002; Moller 2006).

On the other hand, the decision to enrol in higher educational institutions has the potential to change individuals' life, and therefore, is an important policy issue. However, the processes that influence this decision are lengthy and complicated. Student choice research has focused on factors that influence students' ultimate decision to attend college. Several studies have investigated the factors that influence students in their decision to attend a university or college (Briggs 2006; Raposo & Alves 2007; Tavares et al. 2008; Wagner & Fard 2009). These studies can be viewed according to the stimulus-response model of consumer behaviour, where students are faced with external stimulus such as the institutionally controlled marketing vehicles (Maringe 2006), institutional attributes (Domino et al. 2006; Pimpa & Suwannapirom 2008) and non controlled factors like parents and friends' personal influence (Moogan & Baron 2003; Yamamoto 2006).

It is important for service providers to understand the preferences of choice attached by respective customer groups on various product attributes. The relative weightings of importance for each of these attributes provide useful cues to explain why different people make different decision on alternative choices. This current research is one of the first consumer studies undertaken in the context of student choice criteria for

selecting an Indonesian public university by using conjoint analysis approach, therefore, it makes a significant contribution to the body of knowledge in this important area of research. The benefits or otherwise of selecting a particular institution of higher learning is not for the individual alone, but for the whole of Indonesia as a nation.

Several studies have used conjoint experiments to investigate university choice. These studies include in the UK, for example, a study of Hooley and Lynch (1981) who identified course suitability, university location, academic reputation, distance from home, type of university (modern/old), and advice from parents and teachers as important factors in students' decision to enroll in an institution. Moogan et al. (2001) who investigated the choices of school leavers and identified key decision making attributes: course content, location and reputation, found that in the early stages of the decision-making process, prospective students view course content as the most significant factor, but as the consumption process nears, location becomes increasingly important. Another study of the choices made by students from Western Australia was conducted by Soutar and Turner's (2002), who found that course suitability, academic reputation, job prospects, and teaching quality are four most important determinants of university preference. Each of the experiments required students to make trade-offs between a subset of university attributes including course, academic reputation and location. The findings of all three studies were generally consistent with the wider literature. However, none of the studies have addressed the research problem in an Indonesia context, as the criteria may be unique to Indonesia.

Much of the previous research in an Indonesian context (Kemp et al. 1998; Joseph & Joseph 2000) focused on student choice for studying overseas, and not in the context of students choosing between universities within a domestic market. Therefore, this research will explore the most relevant factors that emerge in Indonesian higher education institutions context.

Research Question

The research addresses two key questions:

1. What are the relative importance students attach to the factors that influence them to select an Indonesian public university?
2. Are there groups of students for whom different factors are more important?

Research Methodology

Most investigations of university choice have asked respondents to rate or rank a large number of attributes that may influence their choice (James et al. 1999). While efficient, this approach fails to provide insights into the relative importance of each attribute and the trade-offs made between attributes (Jackson 1982). A popular method for examining the relative importance of attributes is conjoint analysis. This method asks decision-makers to choose between hypothetical scenarios in an experiment to uncover the value they place on different criteria. Conjoint analysis makes several assumptions about decision-making. First, it assumes people evaluate only a few options in detail before making a decision. Second, it assumes options are evaluated as bundles of attributes rather than as whole products. Third, it

assumes a compensatory choice strategy where good performance on one attribute compensates for poor performance on others.

A full profile conjoint analysis, with procedures suggested by Hair et al. (2010) were followed:

1. The respondent is given a set of stimulus profiles (constructed along factorial design principles in the full profile case).
2. The respondents rate the stimuli according to some overall criterion, such as preference, acceptability, or likelihood of choosing.
3. In the analysis of the data, part-worths are identified for the factor levels such that each specific combination of part-worths equals the total utility of any given profile. A set of part-worths is derived for each respondent.
4. The goodness-of-fit criterion relates the derived rating of stimulus profiles to the original rating data.
5. The conjoint analysis model obtains the relative importance attribute for both aggregate and segmented model.
6. A cluster analysis was conducted to find heterogeneous preferences within the sample and to split into different segments.
7. A set of objects are defined for the choice simulator. Based on previously determined part-worths for each respondent, each simulator computes a utility value for each of the objects defined as part of the simulation.
8. Choice simulator models are invoked which rely on decision rules (first choice model, average probability model or logit model) to estimate the respondent's object of choice. Overall choice shares are computed for the sample. Those analyses were performed using the conjoint module of the SPSS/PASW Conjoint 18.

A qualitative study conducted in the early phase of this current research identified 25 attributes, which were too numerous to consider in a conjoint study, as the combinations would have become complicated to evaluate for respondents. Although Hair et al (1995) suggested that the attributes “must be distinct and represent a single concept” (p. 568), six attributes chosen for this study embraced more than a single concept, because it was found in the qualitative study that the links between these concepts were so strong that the various pairs of concepts tended to merge.

The extensive literature review discussed in the research was also the basis for compiling a list of six major attributes that could be used to define or describe university choice criteria. Another qualitative research was conducted before the main survey to determine whether the criteria voiced in previous qualitative study held and to pre-test the questionnaire. As the criteria and their importance were found to be true in each of the qualitative studies, each attribute for the quantitative study was assigned three levels on the basis of respondent wording. Following Hair (2005), the attributes were selected based on three considerations: to achieve the objectives of the investigation, minimise the cognitive task for respondents and facilitate the administration of the survey. The attributes and their respective levels are presented in Table 1. While these may not be an exhaustive list of attributes considered, they do represent the attributes most frequently mentioned and deemed by students to be most important. In order to support further this position, both the single concepts as well as the combined ones, were listed in the attribute section of the questionnaire.

Table 1. List of Conjoint Attributes and Attribute Levels

No	Attribute	Description	Level	Adapted from
1	Total expenses	The money that students would have to pay consisting of tuition fees, food, rent and other expenses from the date of commencement of study until graduation.	a. High b. Average c. Low	None
2	Reputation	Overall reputation of the university such as university ranking, status, university achievement and accreditation as a result of quality of education including teaching quality and classroom learning experience	a. Strong b. Average c. Poor	Soutar and Turner (2002), Hooley and Lynch (1981)
3	Proximity	The distance from home including the time taken to get to university	a. Close b. Moderate c. Far	Soutar and Turner (2002)
4	Job prospect	The range of career opportunities available to students after graduating	a. Good b. Average c. Poor	Soutar and Turner (2002)
5	Advice from Family, Friends, and/or Teachers	Seeking advice from family which is a group of people having kinship with the students including parents, siblings, and other relatives; friend which is a person known well to another, including class mates, acquaintance, seniors in high schools and school graduates who are currently enrolled in university and are friends; and teachers from high school	a. Strongly recommended b. Moderate support c. None/Negative	Hooley and Lynch (1981)
6	Campus atmosphere	Overall university surroundings including campus environment, facilities inside the university, interaction and safety	a. Great b. Average c. Very little	Soutar and Turner (2002)

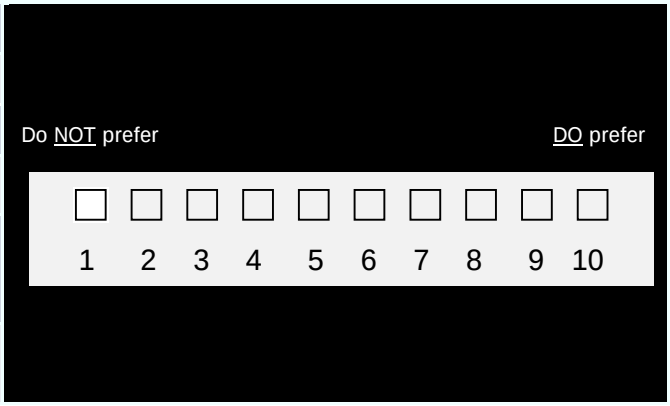
Six attributes with three levels each would lead to 729 (3^6) possible combinations of profiles that can be rated by respondents. The surveys are usually not performed as full factorial design, but rather as fractional design, which basically are fractions of the full design. SPSS/PASW Conjoint 18 reduced size subset (orthogonal array) from 729 to 18. This type of orthogonal creation of full profile cards means that an additive composition rule is assumed to be valid between the variables, meaning that the variables are assumed to be independent from each other. As suggested by Hair et al (2010) that the respondent evaluate a set of profiles equal to a multiple of (two or three times) the number of parameters. Moreover, Ekdahl (1997) asserted that this method were utilised in order to add more attributes into the combinations and at the same time to not increase the strain on the respondents. Four holdout cases were added in the end of the conjoint profile list to ascertain the prediction power of the model and to validate later the results of the conjoint analysis.

Rating scale of 1 to 10 (e.g., on a scale poled from "Do not prefer" to "Do prefer") was used to judge each combination. All the respondents were individually asked to rate university profiles as represented by six key variables, namely total expenses, reputation, proximity, job prospect, advice from family, friends, and/or teachers and campus atmosphere. Students were asked to assume that they had already decided

to study a public university and that they fulfilled the entry requirements for each university. This approach was consistent with the experiment being designed to reflect the final choice stage where students have chosen and identified a small set of universities to which they were confident of gaining entry (James et al. 1999; Moogan et al. 2001). An example of a full profile card is given in Table 2.

Table 2. An example of Conjoint Full Profile Card

P16	Total expenses	High
	Reputation	Strong
	Proximity	Close
	Job prospect	Good
	Advice from Family, Friends, and/or Teachers	Strongly recommended
	Campus atmosphere	Great



The sampling frame consisted of high school leavers who chose to select a public university. This sampling frame was chosen for two reasons. First, as suggested by Soutar and Turner (2002), this population makes up the largest segment of universities' prospective students and they are the major targeted cohort who enter the public university. Second, these individuals are able to provide accurate information regarding their choice processes as they are in the process of selecting a public university. The coverage of this research is on Indonesian public universities in Java, as it has the most population and the most number of public universities than other regions. Four out of six provinces were chosen as a sample area based on the level of social economic status, the number of students enrolment and the number of public universities.

Findings and Discussion

A total of the 625 high school leavers from four provinces in Java completed the conjoint survey, for a 100 percent response rate. Low consistency scores of validation sample (minimum Kendall's tau τ = 0.40) eliminated 222 (35.52%) subject from the analysis to increase the validity and reliability of the model (Burns & Bush 2010; Hair et al. 2010). Although according to Akaah & Korgaonkar (1988), sample sizes below 100 are typical for conjoint analysis, a larger sample size would help control for measurement error. In this current study, the 403 (64.48%) remaining subjects were sufficient to ensure appropriate interpretation of the results.

Consistent with the demographics associated with the population of interest, there were more males than females. Most of the respondents were aged between 18 and 20 years old. Most respondents graduated from public high schools rather than private or other types of secondary school in the sample. In addition, as expected, the majority of the sample was fresh graduate high school leavers in the recent year and never studied at vocational or technical courses. The sample generally reflected the undergraduate population of interest.

In this study, two conjoint models were developed. First, the aggregate model analyzed all 403 responses and assumed homogenous preferences. Second, the segmented model split the data resulted from cluster analysis and analyze it into separate segments.

Aggregate Model

Pearson's *r* and Kendall's tau τ statistics are computed as summary measures of goodness-of-fit. They are reported as indicators of fit between the model and the obtained data (Green & Rao 1971; Green & Srinivasan 1978, 1990; Green et al. 2001) and are very high for this analysis for the aggregate sample (0.997 and 0.967), as they should be for valid analyses. A strong correlation (Kendall's tau τ = 0.667) was found between the predicted model and the holdout set, which gives strong confidence in the suitability of the main effects model. Similarly, the entire sample had a high *r* (above 0.7) for the predicted model and a higher score than 0.4 for the holdout set. The results uphold assumption that high school student perceive university choice criteria as bundles of attributes and consider personal constraints when selecting a public university (see Table 3)

Table 3. Validity and Reliability of the Model

	Coefficient		
	Aggregate (n = 403)	**Segment 1** (n = 80)	**Segment 2** (n = 323)
Constant	5.244	5.188	5.258
Pearson's R	.997	.997	.995
Kendall's tau	.967	.901	.961
Kendall's tau for Holdouts	.667	1.000	1.000

While conjoint analysis provides an estimation of part-worths for each respondent, the results have also been aggregated across the overall sample at each measurement stage in order to observe any time specific change utilities for particular attributes. In addition, the importance scores are computed by taking the utility range for a particular attribute and dividing it by the sum of all the utility ranges (SPSS Inc 2007) and are reported in Table 4.

Conjoint analysis revealed the following order of importance for all respondents: 1. Advice from family, friends, and/or teachers, 2. Reputation, 3. Job prospect, 4. Total expenses, 5. Campus atmosphere, and 6. Proximity. The most important attribute, advice from family, friends, and/or teachers, and the least important attribute, Proximity, are the same for the direct measures and for conjoint analysis. The Table 4 also shows importance ratings by level of attributes.

Table 4. Conjoint Analysis Results for Overall Sample

No	Attribute/ Level	Relative Importance/ Utilities (rank)		
		Aggregate (n = 403)	**Segment 1** (n = 80)	**Segment 2** (n = 323)
1	Total expenses	13.851% (4)	8.296% (3)	15.227% (4)
	a. High	-.143	**.025**	-.185
	b. Average	**.174**	-.010	**.220**
	c. Low	-.031	-.015	-.035
2	Reputation	18.858% (2)	7.166% (6)	**21.754%** (1)
	a. Strong	**.428**	.046	**.523**
	b. Average	.188	-.102	.260
	c. Poor	-.616	**.056**	-.783
3	Proximity	11.195% (6)	7.500% (5)	12.110% (6)
	a. Close	.008	**.050**	-.003
	b. Moderate	**.022**	**.050**	**.015**
	c. Far	-.030	-.100	-.012
4	Job prospect	18.197% (3)	8.499% (2)	**20.599%** (2)
	a. Good	**.537**	.010	**.667**
	b. Average	.041	-.037	.061
	c. Poor	-.578	**.027**	-.728
5	Advice from Family, Friends, and/or Teachers	**25.490%** (1)	**60.245%** (1)	16.882% (3)
	a. Strongly recommended	**.824**	**2.025**	**.526**
	b. Moderate support	.187	1.076	-.033
	c. None/Negative	-1.011	-3.104	-.493
6	Campus atmosphere	12.408% (5)	8.294% (4)	13.427% (5)
	a. Great	**.171**	**.177**	**.169**
	b. Average	-.013	-.212	.036
	c. Very little	-.158	.035	-.206
	Constant	5.244	5.188	5.258

As shown in Table 4, the student population appears to be most concerned with the advice from family, friends, and/or teachers (relative weight = 25.490 percent) as influential factor for choosing a public university. Reputation display the second highest importance rating (19.858 percent), followed by job prospect (18.197 percent) and total expenses (13.851 percent). Campus atmosphere (12.408 percent) and proximity (11.195 percent) contribute the least influence.

Further analysis of the advice from family, friends, and/or teachers (Table 4) suggests a high preference for strongly recommended support (mean utility = 0.824). If this type of support is unavailable, the students in this sample appear less inclined

to attend a university with moderate support (mean utility = 0.187) and may possibly forego a university education if there is no support at all (mean utility = −1.011). This result supports the concerns raised about family, friends, and/or teachers recommendation in the qualitative phase of this study. As suspected, strong recommendation by family, friends, and/or teachers and increased likelihood of choosing university nearby. Although respondents did not exhibit close proximity (mean utility = 0.008) as the highest preference, moderate proximity seem more reasonable (mean utility = 0.022) for them rather than far proximity (mean utility = −0.030).

Surprisingly the respondents in this study more prefer the average total expenses (mean utility = 0.174) and demonstrate increasing disutility when total expenses high (mean utility = −0.143), and low (mean utility = −0.031). As expected, strong reputation and increased likelihood of finding a good job contribute positively to overall utility. The respondents also demonstrate minimum utility for poor job prospect after graduation (mean utility = −0.578), moderate utility for moderate job prospect (mean utility = 0.22), and a strong preference for good job prospect (mean utility = 0.537). Not surprisingly, the respondents in this study also prefer the great campus atmosphere (mean utility = 0.171) and show increasing disutility on average (mean utility = −0.013), and very little campus atmosphere (mean utility = −0.158).

The results presented for the Aggregate Model suggest that “reference group influence” including advice from family, friends, and/or teachers are significantly important than other factors. This results in line with other studies involving Asian students such as in Thailand (Pimpa 2003, 2004; Pimpa 2005; Pimpa & Suwannapirom 2008), Malaysia (Wagner & Fard 2009) and Turkey (Yamamoto 2006). A high involvement of social links in students decision going to university had been investigated in many studies (Ceja 2004; Kim & Schneider 2005; Perna & Titus 2005). For example, parents of first-generation students and who have not had opportunities to attend college (Fann et al. 2009), parents of young women students (Al-Yousef 2009), and siblings (Ceja 2006) become active participants in their children's college preparation and planning. The finding also suggest the respondents in this study are willing to accept the average total expenses, possibly due to concerns about the reputation of the university as well as the quality of education.

Segmented Model

Preliminary cluster analysis was performed through hierarchical method; use Ward’s procedure which combined with the Squared Euclidean distance measure to determine the number of clusters. Then the cluster membership was found by using a non-hierarchical method; use K-means method as suggested by Perera (2008) and Hair et al. (2010). Cluster analysis identified two homogeneous student segments. Each group represents a different preference-based segment, and is substantial in size. The smallest segment represents 19.85% of the sample and labeled ‘social networks-based decision’ segment, while the largest segment represents 80.15% of the sample and labeled ‘rational decision’ segment. Again, conjoint analysis was performed on each segment. Table 4 displays information that shows what variables have the most impact on driving student membership into different segments.

Validity of the two cluster were highly correlated (see Table 3), for Cluster 1, Pearson's r = 0.997 and Kendall's tau τ = 0.901; for Cluster 2, Pearson's r = 0.995

and Kendall's tau τ = 0.961. The predicted model and the holdout set for each of those two clusters were perfectly correlated (Kendall's tau τ = 1.000).

As shown in Table 4, the two clusters differ most on the relative importance placed on advice from family friends, and/or teachers, reputation and job prospect. The first segment places highest importance on advice from family friends, and/or teachers (relative weight = 60.245 percent), followed by job prospect (8.499 percent) and total expenses (8.296 percent). Unlike to the aggregate model, reputation places least important (7.166 percent) after proximity (7.500 percent) as second least important attribute. In contrast, the second segment rates reputation most important (relative weight = 21.754 percent), followed by job prospect (20.599 percent) and proximity least important (12.110 percent). This group ranked advice from family friends, and/or teachers third (16.882 percent) and followed by total expenses (15.227 percent). Similar to the aggregate model, campus atmosphere (13.427 percent) and proximity least important (12.110 percent) exhibit the least influence.

The utility for advice from family friends, and/or teachers (see Table 4) shows that the first segment values the strong recommendation from family, friends, and/or teachers (mean utility = 2.025) and is opposed to another type of support from family friends, and/or teachers (none/negative support mean utility = −3.104). Likewise, the second segment is also concerned to strong recommendation from family friends, and/or teachers. As shown in Table 4, both segments demonstrate disutility from decreases in group reference recommendation, but the rational decision segment is more price-sensitive. For example, with the strong recommendation from their social reference group, prospective students in the first segment may not sensitive on high level of total expenses, even with poor reputation and job prospect. On the contrary, rational decision segment had high expectations on their university preference (see Table 4) by selecting a university with strong reputation, good job prospect, great campus atmosphere which strongly recommended by their reference group but with average total expenses and moderate proximity.

If finding a job is necessary to cover the costs of education, it is not surprising that the two groups also differ significantly on utility for job prospects. Table 4 suggests that the social networks-based decision group is content with poor job prospect after graduation (mean utility=0.027) with either close or moderate of distance from home. However, the rational decision segment is not satisfied with only average level of getting a job offer after graduation, and has a much stronger preference for good chance of an offer (mean utility=0.667).

Choice Simulator

The final stage of the conjoint analysis is the choice simulator. The purpose of the choice simulator is to estimate percent of respondent choice for specific factor profiles entered into the simulator. Most often, the current competitors in the market are defined by identifying specific levels of the choice attributes. The simulator estimates choice share for the current market.

The most common simulator models include the maximum utility (first choice model), the average choice (Bradley-Terry-Luce) model, and the Logit model. The first choice model identifies the product with the highest utility as the product of choice. Each respondent was assumed to choose the profile with the highest utility (max-utility choice rule). After the process is repeated for each respondent's utility set, the cumulative "votes" for each product are evaluated as a proportion of the votes or

respondents in the sample (i.e. “market” share). The Bradley-Terry-Luce model estimates choice probability in a different fashion. The choice probability for a given product is based on the utility for that product divided by the sum of all products in the simulated market. The logit model uses an assigned choice probability that is proportional to an increasing monotonic function of the alternative's utility. The choice probabilities are computed by dividing the logit value for one product by the sum for all other products in the simulation. These individual choice probabilities are averaged across respondents. Both probabilities models tend to give similar prediction (Hair et al. 2010). The SPSS/PASW 18 conjoint simulator utilized holdout profile (for validity and reliability checks) and computes a preference score for each respondent. It offers three choice rules: maximum utility, the Bradley-Terry-Luce probability of choice model, and logit, as presented in Table 5.

Table 5. Conjoint Attributes and Preference Probabilities of Simulations for Aggregate Sample

No	Attribute	Ideal Preference		Attribute Level		
		Level	Utilities Score	Concept 1	Concept 2	Concept 3
1	Total expenses	Average	.174	High	**Average**	Low
2	Reputation	Strong	.428	Strong	**Average**	Average
3	Proximity	Moderate	.022	Far	**Moderate**	Close
4	Job prospect	Good	.537	Good	**Average**	Poor
5	Advice from Family, Friends, and/or Teachers	Strongly recommended	.824	Moderate Support	**Strongly recommended**	Strongly recommended
6	Campus atmosphere	Great	.171	Average	**Average**	Very little
			Maximum Utility	35.7%	**43,7%**	20.6%
			Bradley-Terry-Luce	34.5%	**35.5%**	30.0%
			Logit	35.2%	**40.8%**	24.0%

An ideal preference for the high school leavers according to this current study is to choose a university with average total expenses (0.174), a good reputation (0.428), and a moderate proximity (0.22). Students prefer to choose a university which are strongly recommended by their family, friends, and/or teachers (0,824), have good job prospects (0.537), and a great campus atmosphere (0.171).

In the simulation process, the ideal preference is changed into the more realistic university choice criteria as presented in Table 5. From the three concepts, the most preferable combination for the aggregate sample is Concept 2. This concept holds the highest probabilities score in maximum utility for 43.7 percents, Bradley-Terry-Luce for 35.5 percents and logit test 40.8 percents. The proposition consists of average of total expenses, reputation, job prospect and campus atmosphere, with moderate proximity but strongly recommended by their family, friends, and/or teachers.

Table 6. Conjoint Preference Probabilities of Simulations for Each Segment

No	Attribute	Segment 1			Segment 2		
		Concept 1	Concept 2	Concept 3	Concept 1	Concept 2	Concept 3
1	Maximum Utility	5.6%	40.6%	**53.8%**	43.2%	**44.4%**	12.4%
2	Bradley-Terry-Luce	30.4%	34.3%	**35.8%**	35.6%	**35.8%**	28.6%
3	Logit	16.6%	36.0%	**47.3%**	39.8%	**41.9%**	18.2%

When conducting simulation with the same three concepts on two different segments, it was found that these segments have dissimilar preferences. Segment 1 places the highest preference on choice criteria such as low total expenses, average reputation, close proximity, and this choice were strongly recommended by their family, friends, and/or teachers, though with poor job prospect as well as very little campus atmosphere as presented in the Concept 3 (see Table 5). This concept holds the highest probabilities score in maximum utility for 44.4 percents, Bradley-Terry-Luce for 35.8 percents and logit test 41.9 percents (see Table 6). On the contrary, Segment 2 has more rational choice criteria by selecting Concept 2 as the highest preference which has highest probabilities score in maximum utility for 53.8 percents, Bradley-Terry-Luce for 35.8 percents and logit test 47.3 percents. This concept characterises with average of total expenses, reputation, job prospect and campus atmosphere, with moderate proximity but strongly recommended by their family, friends, and/or teachers. The results are consistent between the Segment 2 and the aggregate sample, as can be observed from the Table 5. The results reveal that Concept 1's proposition is not at all attractive to any of the segments. This combination shows that generally, high school leavers in this research have realistic choice criteria even tough they still depend on their social networks recommendation for selecting the best university to study.

Implication of the Findings

The purpose of this study was to evaluate the choice criteria used by prospective undergraduate students and determine whether there are groups of students for whom different factors were more important. The research confirms that prospective students use a subset of attributes when selecting a university. The results also show that while some students consider high reputation and good job prospect as part of their choice criteria, many continue to express concerns regarding the strong influence of social networks.

Public universities should deliver on the most important criteria identified by prospective students. Mass customisation (Kotler 1989) is the appropriate marketing strategy for universities. Appropriate information dissemination to both prospective students and their reference group should be at the core of customisation of universities' promotional strategies. Each influencing entity must primarily be given information that it deems important. In terms of marketing these educational products, it would mean that word-of-mouth communications, which is dependent on reference groups influence, is more appropriate as a communication tool. Institutions would have to continue to invest more on a mix of integrated marketing communications to appeal, persuade and attract new students.

This analysis also intended to give an insight into the use of conjoint analysis in estimating relative market shares. More complex simulations could be conducted by varying several attribute levels simultaneously. In addition, it is possible to analyse the impact of new profile's combination to an existing set of university profile, for example to the three concepts which form the basis for the base simulation.

The study illustrates, however, the relevance of conjoint analysis as an effective analytical tool for the identification of important choice criteria and university preference in general, and its potential contribution to the development of more effective marketing strategies from the perspective of the prospective students in both different segments. The results can help university administrators and recruiters customize their marketing strategies to each segment by providing important information to the principal parties involved in making university choice decisions.

Limitations and Future Research

This research has limitations that restrict the generalisation of its findings and open up directions for future research. First, only high school leavers in Java that choose to go to public universities were investigated. This means that the information gathered and the conclusions reached may require further testing in less populated regions. Second, the study did not cover high school leavers who choose polytechnics and other higher education institutions, because they are a different type of higher education institution.

As a future research direction, to get benefit for conducting conjoint analysis based on cluster, surveys can be targeted at specific student segments, such as based on social economic status of the prospective students, and perhaps conducted in different geographical area. One could then determine if there are other relative importance factors occur. Along these lines, marketing strategies could be customised to each of these target markets in a more effective and differentiated way.

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