

Analysis and Evaluation of Decision-Making Factors Prospective Students Choose Department of Statistics

(Case study on Student of Statistics Department UII Acceptance year 2015 – 2017)

Achmad Fauzan^{1, a)}, Asmadhini Handayani Rahmah²⁾ and Sendhyka Cakra Pradana³⁾

*Department of Statistics, Faculty of Mathematics and Natural Science, Universitas Islam Indonesia
Jl Kaliurang KM 14,5 Sleman, Yogyakarta, Indonesia*

^{a)}Corresponding author: *achmadfauzan@uii.ac.id

Abstract. One of the efforts made a department at the University to develop is started since the admissions process of new students. Various efforts undertaken by department to obtain the students, ranging from promotion by online and offline. Similarly, efforts have been made by department of Statistics, Universitas Islam Indonesia to get the students that not only focuses on the quantity but also the quality. Although promotion and numerous attempts have been made, there has been no in-depth analysis and evaluation of those activities. In addition, so far there has been no in-depth research that analyzes the factors which a dominant as well as the pattern of thought of students in decision-making prospective students register at the department of Statistics UII. Based on this, then do the research to find out the factors and mindset of prospective students in decision-making when registering at department of Statistics UII. This research will be helpful particularly department of Statistics UII in General to setting policy that will be taken further in enhancing the quality and quantity of Statistics department's new students for the upcoming years. The sample used was an active student of department of Statistics UII on acceptance years 2015 – 2017. The data captured is primary data, so data collection in direct observation, interview, questionnaire and charging. By using descriptive analysis, the percentage obtained by that variable products, promotion, place and job opportunities have influence with good enough against the decision making. Proceed by using multiple regression analysis of the obtained results that the place of origin, price, region and job opportunities have significantly to influence decision making.

INTRODUCTION

Department of statistics is a program of study that stands under the auspices of the Faculty of mathematics and natural sciences (FMIPA) Islamic University of Indonesia (UII). As the times progressed, people began to realize that the science of statistics is a science that is indispensable in a variety of fields. The Statistician has a strategic function and role in management and management of the system either in the Government, corporate, or society.

However, statistics is still a science that is less preferred by the society as the study options. Moreover, Department of statistics UII is a department at a private university. One of the paradigms of Indonesian society is still strong is the assumption that the state universities better than private universities. Based on this, extra effort is needed for socialization and promotion to introduce Department of Statistics to prospective new students and the public.

Department of Statistics has massive way of socialization and promotion in various media both print and electronic media. However, there has been no evaluation of these activities. In addition, so far there has been no in-depth research that analyze, which are dominant factors in decision making prospective students register in the Department of Statistics UII. Based on this, researchers need to do research to find out which factors that are dominant, and the pattern of thought in decision-making prospective students register in Department of Statistics UII. Knowing it will be very helpful for especially Department of Statistics and UII in general in setting policies

that will be taken further in improving the quality and quantity of new students from Department of Statistics for the coming years.

Theoretical Basis

On the decision-making process [1], there are three things that mutual sustainability including: (1) input ; (2) process ; (3) output. One aspect to determining consumer decisions if seen from the aspect of the manufacturers are marketing mix. The marketing mix is defined as a group of strong marketing from a company to achieve its marketing goals [2]. The goal of the marketing mix is the large number of consumers who bought or interested with the products offered. Some of the factors that influence the decision of consumers to purchase, i.e. the internal factors (individual) and external factors (environment) [3].

Having regard to the assessment of the accreditation of study programs, based on National Regulatory Agency Accredited College number 4 Year 2017 about drafting policy instrument of accreditation include (1) vision, mission, goals, and strategies; (2) teachers ' governance and partnership; (3) students; (4) human resources; (5) the financial wherewithal, and infrastructure; (6) education; (7) research; (8) community services; (9) external and close to the results of education, research and community services. Based on the factors and assessment accreditation of study programs, along with previous research, this study reviewed the aspects examined against a consumer (a candidate), which is as follows.

1. Internal Factors

- Promotion (Defined as the effort that has been made of the department of Statistics UII, to introduce themselves to candidates students.)
- Product (Defined as a results or output of graduates from the department of Statistics UII.)
- Process (Defined as admissions procedure, until the process of re-list a student at the department of Statistics UII.)
- Customer Service (Defined as service that was later given to consumers. In this research is a service provided by the Department to candidate students, until the process of re-list a student at department of Statistics UII [4])
- Price (Pricing Policy imposed when he was a student of statistics UII.)

2. External Factors

- Infrastructur (Include a lecture hall, laboratories, library, student creativity, as well as other infrastructure.)
- Activity and student achievement (Student activities ever done either within the scope of national and international decision-making affecting prospective students to enroll in the department of Statistics UII.)
- Location and reputation (Defined as the location of the Department of Statistics to influence candidate students in Statistical UII. Meanwhile, a reputation which is meant here is the reputation of UII)
- Friends and brothers (the influence of friends and relatives, as well as cooperation between Statistical UII with particular schools.)

Research Steps

The research conducted focuses on Department of Statistics Study Program study program in evaluating itself in promotional activities to attract new students. Based on the Rencana Strategis Penelitian dan Pengabdian Pada Masyarakat (Renstra PPM) UII for the period of 2016 to 2020 planned to enter the category of intelligent residential development, sustainable, and disaster response, this is because with the analysis of factors that detail is expected later formed an effective and efficient evaluation scheme for the acceptance of Department of Statistics UII students who can later to form a generation ready to develop their respective regions.

The research is about explanatory or confirmation research. Explanatory research or confirmation research is a research with the aim of explaining the causal relationship between variables through hypothesis testing and implemented by descriptive analysis approach and verification through survey [5]. Later, Department of Statistics UII can make policy by considering SWOT analysis (Strength, Weakness, Opportunity, Threatment). Furthermore, the achievement of quality results in accordance with the mission vision of Statistics UII study program. Factors to be examined in accordance with the literature review, presented the following figure.

ng Student Decision	<p>Internal Factors</p> <ol style="list-style-type: none"> 1. Promotion. 2. Product. 3. Place. 4. Price.
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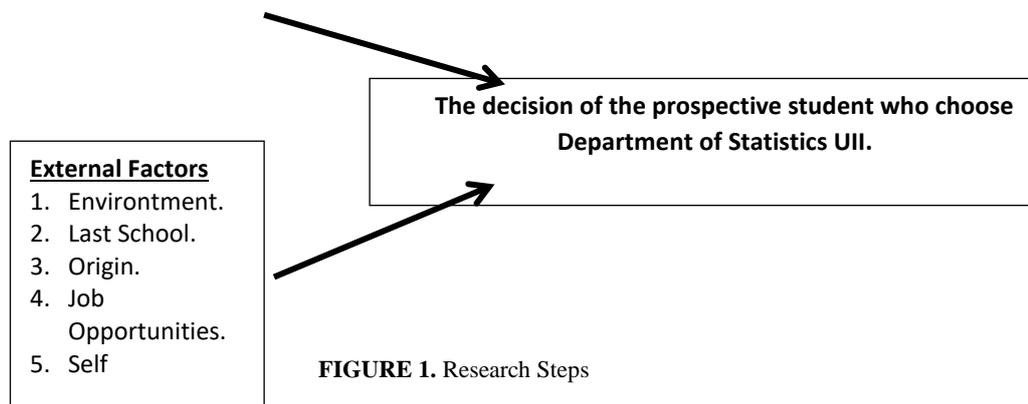


FIGURE 1. Research Steps

Descriptive Statistics

Statistical Analysis Descriptive in this research, conducted two steps, descriptive analysis of respondents demographics and descriptive percentage each items questionnaire question. Descriptive analysis of respondents demographics is done by making a graph based on the demographic data of respondents who fill the questionnaire. While the percentage descriptive analysis is done with the following steps

1. Scoring respondents answer.
2. The sum of total score obtained by respondents answer based on the level of trend.
3. Grouping of scores obtained from respondent by level of trend.
4. Viewed percentage level of tendency with existing categories so that later obtained information research result.

Scoring in this study range from 1 to 4. Research conducted by looking at the level of tendency. Conducted categorization in determining the trend of each aspect. The required criteria are ideal average (M) and Standard deviation (S_{Bi}). There are four categories of trends [6], as in **Table 1**.

TABEL 1. Level of Tendency Tabel

Score	Conversion Formula	Category
4	$M + 1.5 S_{Bi} \leq X < M + 3S_{Bi}$	Good
3	$M \leq X < M + 1.5 S_{Bi}$	Pretty Good
2	$M - 1.5 S_{Bi} \leq X < M$	Not Good
1	$M - 3S_{Bi} \leq X < M - 1.5 S_{Bi}$	Bad

Multiple Regression Analysis

After subject to the regression model, to determine the suitability of data on the regression model can use a large coefficient of determination (R^2). The regression model is good if the value R^2 close to one (1). Value of R^2 known as the coefficient of determination (sample) and is a commonly used quantity for measuring goodness (*goodness of fit*) based on regression [7]. As verbal R^2 used to measure the proportion (part) or percentage of total inner variance on the regression model. The calculation of the coefficient of determination is:

$$R^2 = \frac{JKR}{JKT} = \frac{\sum_{i=1}^n (\hat{Y}_i - \bar{Y})^2}{\sum_{i=1}^n (Y_i - \bar{Y})^2} \quad (1)$$

F test better known as simultaneous test or joint test is a test used to see how the influence of independent variables together to the dependent variable. Test F is done by comparing F_{cal} with F_{tabel} , or can also be done by looking at the column of significance on each F_{cal} . Decision making in t test if $F_{cal} > F_{tabel}$ so H_0 rejected, if $F_{cal} < F_{tabel}$ so H_0 accepted.

Test t or generally known as the partial test, which is a test used how the influence of each independent variable on a study independently of the dependent variable. Test calculations can be done by comparing t_{cal} with t_{tabel} , or can also be done by looking at the column of significance on each t_{cal} . Formula of t test presented on equation (2)

$$t_{cal} = \frac{r \sqrt{n-2}}{\sqrt{1-r^2}} \quad (2)$$

Decision making in t test if $t_{cal} > t_{tabel}$ so H_0 rejected, if $t_{cal} < t_{tabel}$ so H_0 accepted.

Relative Support (SR%) dan Effective Support (SE%)

Relative Support is the value of a presentation which shows how much the relative contribution of each independent variable to the dependent variable for predictive purposes. The formula for calculating relative contributions [9] is given in the equation (3)

$$SR\% = \frac{\alpha \sum XY}{JK_{reg}} \times 100\% \quad (3)$$

Effective Support shows the effective percentage given each independent variable to the dependent variable by still taking into account other variables that are not examined. The formula for calculating effective contributions [9] in the equation (4)

$$SE\% = SR\% \times R^2 \quad (4)$$

RESULTS AND DISCUSSION

Descriptive Statistics

Based on the distribution of trends table performed on each research variable, obtained conclusions as in **Tabel 2.**

TABEL 2. Distribution of Trends Independent Variable

No	Variable	Category	Information
1.	Promotion (X_1)	Pretty Good	The quality and quantity of promotion is expected to be further improved in the admission of new students.
2.	Product (X_2)	Pretty Good	One of the evaluation materials of quality improvement for Department of Statistics.
3.	Place (X_3)	Pretty Good	Viewed from the geographical factors that support the convenience of learning and the focus of students in the course of lecturing. Even 71,761% gives a significant influence on student decision making.
4.	Price (X_4)	Not Good	There needs to be a scholarship or financial assistance to students in the fulfillment of needs when undergoing the process during studying in the college.

No	Variable	Category	Information
5.	Environment (X₅)	Not Good	Prospective students are educated in the Department of Statistics UII due to factors of self and family environment compared with secondary environmental groups.
6.	Last School (X₆)	Not Good	Prospective students are educated in the Department of Statistics UII due to self-awareness and information obtained from various sources not only from the last school of prospective students.
7.	Origin (X₇)	Not Good	Most of the prospective students are educated in the Department of Statistics UII due to department quality factor, not because the origin of their area comes from.
8.	Job Opportunity (X₈)	Pretty Good	Prospective students are expected to earn great job opportunities and be able to work in accordance with the demands of the times and compete in global competition.

Multiple Regression Analysis

The valid regression model must have the criteria *Best, Linear, Unbiased, and Estimated* (BLUE). Indicator to find out whether the regression model used in the study has met the BLUE criterion, then the multiple linear regression prerequisite test, is the classical assumption test. Classic assumption tests, including : (1) normality test, (2) uji heteroscedasticity test, (3) multicollinearity test. After the test, then stated regression model in this study has fulfilled the assumption. Based on **Table 3**. The result of multiple regression analysis is.

TABEL 3. Result of multiple regression analysis.

No	Variable	Coefficient of Regresssion (β)	t_{cal}	Sig. or Pr (> t)
	Intercept	6.72377	3.657	0.000319
Independent Variable	Promotion (X ₁)	0.06188	0.541	0.588967
	Product (X ₂)	0.09469	1.294	0.196971
	Place (X₃)	0.24631	2.425	0.016119
	Price (X₄)	0.45495	3.095	0.002221
	Environment (X ₅)	-0.11671	-0.743	0.457966
	Last School (X ₆)	0.30558	1.717	0.087368
	Origin (X₇)	-0.65802	-2.972	0.003290
	Job Opportunity (X₈)	0.68838	6.291	1.66e-09
Multiple R-squared (R ²)		0.4769		
Adjusted R-squared		0.4581		
F-statistic		25.3		
p-value		< 2.2e-16		

Based on **Table 3**. The result of regression analysis in the equation (5),:

$$Y = 6.723 + 0.246X_3 + 0.454X_4 - 0.658X_7 + 0.688X_8 \quad (5)$$

Result of Determined coefficient (R^2) is 0.4769 or 47.69%. Can said 47.69% student decisions are influenced by the independent variables studied (promotion, product, place, price, environment, last school, origin, job opportunity) while the rest 52.31% (100%-47.69%) explained by other factors not examined in this study.

Based on **Table 3**. Result of p -value is 2.2 e-16, smaller than α 0.05, so it can be concluded that together eighth (8) independent variables and constants affect the dependent variable that is the decision to choose Department of Statistics UII. Then t test to see the influence of each independent variable to the dependent variable, and obtained conclusion based on **Table 4**.

TABEL 4. Result of T Test

No	Variable	t_{cal}	Result	Information
	(Intercept)	3.657	Rejected H_0	Intercept has a significant influence on student decision
	Promotion (X_1)	0.541	Accepted H_0	Promotion (X_1) have no significant effect on student decision
	Product (X_2)	1.294	Accepted H_0	Product (X_2) have no significant effect on student decision
	Place (X_3)	2.425	Rejected H_0	Place (X_3) have significant effect on student decision
	Price (X_4)	3.095	Rejected H_0	Price (X_4) have significant effect on student decision
	Environment (X_5)	-0.743	Accepted H_0	Environment (X_5) have no significant effect on student decision
	Last School (X_6)	1.717	Accepted H_0	Last School (X_6) have no significant effect on student decision
	Origin (X_7)	-2.972	Rejected H_0	Origin (X_7) have significant effect on student decision
	Job Opportunity (X_8)	6.291	Rejected H_0	Job Opportunity (X_8) have significant effect on student decision

Based on equation (5) the result of constant is 6.723. It describe about the variabel of X_1 until X_8 against the decision is considered constant or zero, then the decision of the student chooses a department of statistics of 6.723. The regression coefficient on the variable promotion (X_1) is 0.061, this means if the factor variable is X_1 increased one unit then the decision variable of students choose the department of statistics increases 0.061. It also next into X_8 variable.

Based on **Table 4**, Place (X_3), Price (X_4), Origin (X_7), and Job Opportunity (X_8) has significant influence on student decisions choosing in department of statistics UII. But promotion (X_1), Product (X_2), Environment (X_5), and Last School (X_6) has no significant influence on student decisions choosing in department of statistics UII.

Relative Support (SR%) and Effective Support (SE%)

Based on the results of multiple linear regression analysis is known value Relative Support (SR%) and Effective Support (SE%) each independent variable to dependent variable. Number of value each SR and SE is in **Table 5**.

TABEL 5. Result of SR and SE Independent Variable

No	Variabel	Contribution	
		Relativeness (SR%)	Effectiveness (SE%)
1.	Promotion (X_1)	6.591048352	2.6395
2.	Product (X_2)	13.54165342	5.422992
3.	Place (X_3)	17.60188044	7.04898
4.	Price (X_4)	11.0924789	4.442177
5.	Environment (X_5)	2.56132751	1.025728
6.	Last School (X_6)	4.38059326	1.754285
7.	Origin (X_7)	9.484603183	3.798275
8.	Job Opportunity (X_8)	34.74641492	13.91481
Total		100%	40.046%

Based on **Tabel 5**, it is found that job opportunity has the biggest relative and effective contribution, it can be taken into consideration of Department of Statistics UII to further increase the role in the expansion of graduate work or post-graduate cooperation.

CONCLUSION

Based on the results of descriptive analysis and regression analysis, the most dominant factor in influencing prospective students to choose the Department of Statistics UII is the place. Variable place included in this variable are facilities and infrastructure, convenient and strategic location, easy to reach, and facilities offered. It can be concluded that the place factor becomes the consideration of the students who at that time as a prospective student, in choosing the study program as the campus. In addition to place, price variable, regional origin and employment opportunities also have a significant effect. Based on relative and effective donations, employment opportunities have the largest relative and effective contribution, which can be taken into consideration for the Department of Statistics UII to further enhance the role in the expansion of graduate work or post-graduate cooperation.

The things that need to be done on Department of Statistics UII is to give more attention to the variable of place and put into promotional activities as material for attraction for prospective students. In addition, continue to improve the promotion that has been done and continuously improve the quality of education offered as an increase in products and graduates as a result of improving the quality of educational activities offered. In addition, place variables, regional origin and employment opportunities must also be considered in order to continue to increase and more significantly influence.

ACKNOWLEDGMENT

The authors thanks to Department of Statistics UII and Direktorat Penelitian & Pengabdian Masyarakat (DPPM) UII, due to the funding of HPDP for this work.

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