

# Perceptual Mapping of Higher Education Prospective Students in Bandung, Indonesia: A Base for a Strategy

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**Abstract**--This study aims at analyzing the position of some universities in Bandung, especially the position of Widyatama University. The analysis was conducted through perceptual mapping created through a technique called Multidimensional Scaling (MDS). The position of Higher Education mapped based on 8 attributes and 7 colleges as references in the perceptual map. Based on 8 perceptual map attribute preferences and the position of each university, the author analyzed competitive advantages and disadvantages, and similarities amongst the universities. The Sample size is 750 respondents. The respondents are prospective students of Higher Education. This paper also discusses the results of the research and made some recommendations.

**Keywords**---High School, Multidimensional Scaling, Similarity, Competitive Advantages, and Positioning.

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## I. INTRODUCTION

[1] argues that the purpose of marketing is not just to expand sales, but also know and understand the customer so that the product or service fits the customer. Positioning is a marketing strategy that aims to place the product on the market so that consumers perceived accordance with the wishes of the management [2]. Moreover, [3], and [2] reveals the importance of research on consumer perception, especially in relation to the positioning strategy. The statements are presented to shape consumer perceptions of products sold. Consumer perceptions of the product itself can be mapped through a statistical technique called perceptual mapping [2].

The marketing activities need to be made in accordance with the intended market or consumer conditions. One way of understanding the market or consumer is to understand the consumers perception on the products or organization. [1] and [2].?

This study *aims at*: (1) analyzing the position of several Universities in consumer perception, (2) analyzing the attributes that provide a competitive advantage or disadvantage in the competition, and (3) analyzing the positioning strategy that can be used to anticipate business conditions in the future, through the concept of similarity.

## II. LITERATURE REVIEW

Perception is a product of an information processing in the form of stimuli presented by companies that are accepted by consumers [4]. Consumers make choices based on the perception of the inherent value of the products and services offered [5:12]. [6:101] reveals that the perception is the beginning of an action taken by consumers. Also, perception can affect the image of a company since it forms the image of a company.

[4] reveals "perception is defined as the process by which an individual selects, organizes, and interprets stimuli into a meaningful and coherent picture of the world". A stimulus may be accidental due to, for example, economic, political, social, technological, and competition conditions; or it can be deliberate, namely programs that covered the composition of the marketing mix of product, price, distribution channels and promotion [4:161]. Marketing mix could be used by a company to support the position of products in consumer perception [2], so the marketing mix has

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a close connection with the positioning strategy undertaken by the company. The strategy of positioning itself developed by a company through the steps of segmenting-targeting-positioning, also known as STP process [2].

### III. RESEARCH DESIGN

The processed data that provide answers to the problems in this study were collected through non-probability sampling method, i.e. convenience sampling. as proposed by [7:293], [8], [9]. This is done by measuring the values, lifestyles, use of, and attitudes toward college students. The samples of the research amount to 200 respondents per high school cluster, bringing the total of 600 respondents for the three clusters in the Bandung city area, multiplied by the completion rate [10] by 25%, contributing to the total of 750 respondents. A statistical technique used is Multi Dimensional Scaling

Consumer perceptions mapped through multidimensional scaling (MDS) techniques, which is the method used to map the universities' positioning to the attributes (variables) used as a parameter positioning based on prospective students' perception. The goal of MDS is to map objects based on the similarity / dissimilarity (similarity / dissimilarity) between the objects. The more similar characteristics between two objects, the closer the two objects, and vice versa [11].

[11] revealed that the factor analysis, discriminant analysis, and multidimensional scaling (MDS) are three different statistical analysis tools. Factor analysis and discriminant analysis are two analytical tools instrumental in reducing the data through the method of interval scaled ratings of some of the attributes that are provided for the consumer respondents. The analysis of MDS is the respondents' overall similarity judgments, thus more useful in finding similarity judgments made by consumers.

### IV. RESULT

#### A. Higher Education Positions

The processing of the data to determine the position of each college in the perception of prospective students in Bandung using the Multi Dimensional Scaling refers to the concepts and techniques suggested by [12] and [13].

#### B. Preference and Higher Educations coordinates

Table 4 is the coordinates of each college, while Table 5 is the coordinates of each attribute. Based on these coordinates, the Euclidean distances between each university with their respective attributes can be calculated each.

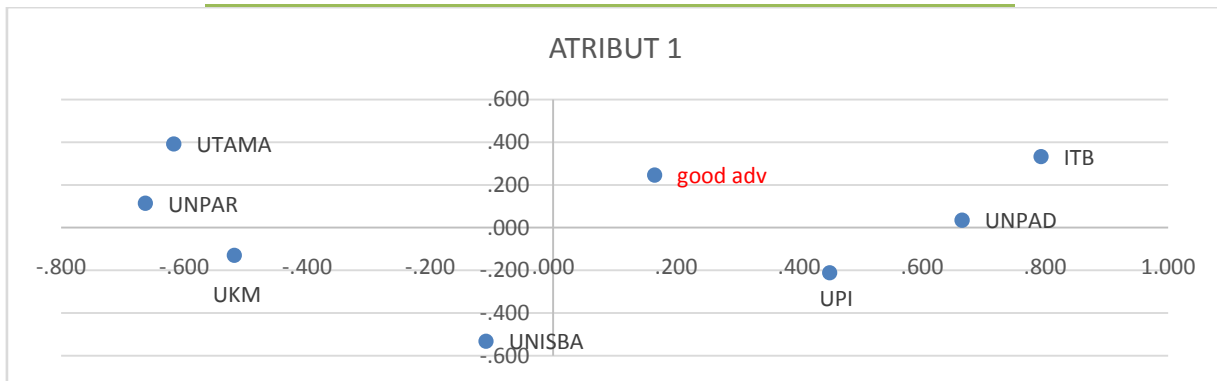
The analysis is conducted by focusing on the object distance with the preference point (euclidean distance). The closer the point of college perception to the point of preference, the more corresponding between universities with the prevailing perception in the minds of prospective students. Furthermore, the seven colleges are discussed based on their eight attributes. The attributes are used as positioning parameters (as perceived by the consumer).

**Table 4: Higher Education Final Coordinates.**

	Dimension	
	1	2
UTAMA	-.617	.391
UNPAR	-.663	.114
UKM	-.519	-.130
ITB	.793	.332
UNPAD	.665	.035
UNISBA	-.109	-.532
UPI	.450	-.211

**Table 5: Attributes Coordinates.**

No	Atribut	Dim 1	Dim 2
1	Good Advertising	,165	,246
2	Popular / Famous	,168	,116
3	In accordance between cost and quality	,060	-,059
4	In accordance between cost and benefit	-,029	-,130
5	Liked by family	-,095	-,049
6	Has full learning facilities	-,131	-,027
7	Has full sports facilities	-,124	-,062
8	Near from home	,003	,003



**Figure 2: Positioning the 7 Higher Schools and 1<sup>st</sup> Preference Attribute (good advertising)**

**Table 7a: Euclidian Distance between All Higher Educations and All Attributes**

	UTAMA	UNPAR	UKM	ITB
Good Advvertising	0.80	0.84	0.78	0.63
Populair	0.83	0.83	0.73	0.66
In accordance between cost and quality	0.81	0.74	0.58	0.83
In accordance between cost and benefit	0.79	0.68	0.49	0.94
Liked by family	0.68	0.59	0.43	0.97
Complete learning facility	0.64	0.55	0.40	0.99
Complete sports facility	0.67	0.57	0.40	1.00
Near from home	0.73	0.68	0.54	0.86

**Table 7b: Euclidian Distance between All Higher Educations and All Attributes**

	UNPAD	UNISBA	UPI
Good Advertising	0.54	0.82	0.54
Populair	0.50	0.70	0.43
In accordance between cost and quality	0.61	0.50	0.42
In accordance between cost and benefit	0.71	0.41	0.49
Liked by family	0.76	0.48	0.57
Complete learning facility	0.80	0.51	0.61
Complete sports facility	0.79	0.47	0.59
Near from home	0.66	0.55	0.49

**Table 8a: Euclidian Distance between Higher Education Institutions**

	UTAMA	UNPAR	UKM	ITB
UTAMA		0,079	0,281	1,992
UNPAR	0,079		0,080	2,169
UKM	0,281	0,080		1,934
ITB	1,992	2,169	1,934	
UNPAD	1,770	1,770	1,428	0,105
UNISBA	1,110	0,724	0,329	1,561
UPI	1,501	1,344	0,944	0,413

**Table 8b: Euclidian Distance between Higher Education Institutions**

	<b>UNPAD</b>	<b>UNISBA</b>	<b>UPI</b>
UTAMA	1,770	1,110	1,501
UNPAR	1,770	0,724	1,344
UKM	1,428	0,329	0,944
ITB	0,105	1,561	0,413
UNPAD		0,920	0,107
UNISBA	0,920		0,415
UPI	0,107	0,415	

## V. DISCUSSION

Referring to the results of the perceptual map shown in Figure 2, and Euclidian distances in Table 7a, 7b, 8a, and 8b, some points can be discussed related to the positioning of the seven colleges in the study.

First, it can be seen that based on Table 7a, b and 8a, b, the strategically closest Euclidean distance between an attribute and the college is the competitive advantage of that college, while the farthest Euclidean distance between the an attribute and the college is the disadvantage of that higher education compare to other universities.

Second, based on Table 8 the author noticed that the closer the Euclidean distance between the universities with other universities in the perceptual map, the more similar the strategies of both Colleges.

Third, based on Table 8a, b it can be also seen that the closer the Euclidean distance between the universities with other universities in the perceptual map, the more competitive the two universities. The three findings are further used as a basis for analyzing the strategic conditions of each university in the Education Industry in Bandung.

### A. UTAMA, UNPAR, AND ITB

In Table 7a, b and 8 b it is apparent that within the seven attributes, three colleges do not have a competitive advantage compared to other universities, namely Universitas Widyatama (UTAMA, Widyatama University), Universitas Parahyangan (UNPAR, Parahyangan Catholic University), and Institut Teknologi Bandung (ITB, Bandung Institute of Technology), since they do not have the closest distance to a single attribute preferences.

On the one hand, the nearest Euclidian distance to UTAMA and UNPAR is Attribute 6, namely complete learning facilities. It suggests that a comprehensive learning facility is an attribute owned by UTAMA and UNPAR. Therefore, the attribute can be used as a reference point (initial step) to develop the colleges' competitive advantages.

On the other hand, Attribute 2 (popularity) showed the most disadvantage for Widyatama University, since it is the farthest distance it possessed compared to the distance of the other colleges to this attribute. Hence, it should be noticed by Widyatama University and it may be detrimental to consider its motto "friendly campus for future business pro" to contain popularity elements for prospective students who are relatively still a teenager.

The most disadvantage for UNPAR is Attribute 1 (good advertising), since it is its farthest distance. It should be noticed by UNPAR: to enhance the competitive advantage, it needs to improve its advertising messages to be perceived better. Such conclusion is based upon Schiffman and Kanuk (2013) study which suggests that ads can affect a person's intention or attitude to make a purchase.

Table 8a and b show that the nearest Euclidean distance for Widyatama with other colleges is UNPAR, while the farthest distance is ITB. It demonstrates how, in the perception of prospective students, Widyatama has more similar conditions top UNPAR than to ITB. Furthermore, it suggests that in Bandung Educational Industry Widyama Universtiy is the main competitor of UNPAR, while the furthest competitor is ITB.

The nearest Euclidian Distance to ITB is Attribute 1, namely a good advertising. This suggests that communication is an attribute it possesses. It can be used as a reference point (initial step) to develop its competitive advantages.

In addition, the motto of ITB is "In Harmonia Progressio" which means "Progress in Harmony" ([https://id.wikipedia.org/wiki/Institut\\_Teknologi\\_Bandung](https://id.wikipedia.org/wiki/Institut_Teknologi_Bandung)). It reflects how ITB wants the institution to be perceived

by prospective students as a university "always ahead in the balance". Prospective students appear to have been perceiving in accordance to with the wishes of this College, since motto is a part of advertising.

The most disadvantage for ITB is Attribute 7 (complete sports facility), since it is the farthest distance in possession. Thus, ITB should take into account to enhance the competitive advantage especially in improving its sport facilities to be perceived better.

Table 8a shows that ITB has the Euclidean distance closest to UPI and the farthest distance to UNPAR. It highlights that the perceptions of prospective students within ITB strategic conditions are not much different from those of UPI, in the sense of having similarity. A plausible conclusion regarding the perception of prospective students is that both universities have same the state-owned status while UNPAR is a private university.

#### *B. Maranatha Christian University (UKM, Universitas Kristen Maranatha)*

Table 7a shows three attributes that are the closest distance to Maranatha Christian University (UKM), namely Attribute 5 (liked by family), Attribute 6 (complete learning facilities), and Attribute 7 (complete sports facilities). It shows that UKM has three competitive advantages in the Education Industry in Bandung. The closest attribute out of the three attributes are Attributes 6 and 7, indicating that, in the perception of prospective students, UKM owns the best learning and sport facilities compared to the other higher education institutions.

The farthest Euclidian Distance is the first attribute, namely a good ad. It shows that in the perception of prospective students in Bandung, UKM has yet to produce good advertising, regardless it not being the lowest ranking among the six other colleges. So it needs to consider an improvement primarily in its motto: the college wants itself perceived by prospective students as a university that yields a person of Integrity (Integrity), Attention (Care), and Excellence (<https://www.maranatha.edu/visi-misi-value/?lang=en>).

Table 8a shows visible similarity between UKM strategy and other universities. The closest Euclidian distance to UKM with other universities is UNPAR. As stated in the previous section, the similarity between UNPAR and UKM is reasonable given that the two institutions have the same basis, namely religion. Therefore, both can be said to be a direct competitor of each other (head to head competitors).

#### *C. Universitas Padjadjaran (UNPAD)*

Table 7b reveals that Attribute 1--a good ad--has a distance closest to UNPAD and UPI compared with five other universities. Of the 8 attributes of references, popularity or Attribute 2 is the closest to UNPAD.

The conditions show that in the perception of prospective students, advertising by UNPAD and UPI are the best among the seven colleges. Even so, UNPAD is considered not the most popular among the seven Universities analyzed.

Based on this, it can be concluded that in the education industry, advertising is its competitive advantage that allows itself to compete with other universities. Since the farthest Euclidean distance is the sixth attributes namely learning facility, it can be concluded that the main weakness of the school in the perception of prospective students is the lack of learning facilities.

UNPAD does not have a clear communication message nor a motto: it only has a mission statement the Scientific Highlights Pattern (PIP). Its mission is to "build glorious law and environmental in the national development.(?)" It can be interpreted as a position it desires. It appears that prospective students consider it in accordance with its aspiring objectives, since popularity is its closest distance. Thus, popularity can be used as a first milestone of the development of the strategic position of the school.

Table 8b shows the perceptions of prospective students indicating that UNPAD has similarity with ITB and UPI. The Euclidean distance between UNPAD and other universities are insignificant in difference. The similarity of the three universities are that they are state-owned, so it can be estimated that prospective students in Bandung maintains the status orientation in selecting their prospective college.

#### *D. Bandung Islamic University (UNISBA)*

Table 7b reveals that the closest attribute to UNISBA is Attribute 4 (in accordance to cost and benefit). It shows that cost, may be in terms of tuition fees is a competitive advantage for UNISBA. Such advantage of course, must be maintained by UNISBA, especially in maintaining its strategic position. Meanwhile, the farthest Euclidean distance is

the first attribute, which is a good ad. It shows that the perceptions on UNISBA from prospective students in Bandung has is not satisfactory, although it is not the worst attribute among the other six universities. It suggests, therefore, that the institution needs to improve items primarily associated with its motto Mujahid, Mujtahid, and Mujaddid, which translates to Warrior, Researcher and Innovator ([https://id.wikipedia.org/wiki/Universitas\\_Islam\\_Bandung](https://id.wikipedia.org/wiki/Universitas_Islam_Bandung)) even though it may already have its own segment in the market.

Table 8b shows that in the perceptions of prospective students, UNISBA have similarity with UPI. Similarity both universities are possibilities (opportunities?) in terms of a strong orientation towards education, because UNISBA has one of the oldest education faculties in Bandung that may lead to the the similarity perception by prospective students.

#### *E. Indonesia University of Education (UPI)*

Table 7b shows that there are three attributes that are closest to UPI, namely Attribute 1 (good advertising), Attribute 2 (popularity), and Attribute 3 (in balance between cost and quality). It grants a considerable assumption that UPI has three advantages in the education industry in Bandung. The closest attribute of the three attributes is Attribute 3 as it shows that in the perception of prospective students UPI offers the best cost-quality ratio.

All three of these advantages should be maintained by UPI to uphold its strategic position. Meanwhile, the institute is also recommended to focus on the farthest distance which is Attribute 6 or the learning facility. The prospective students perceived that the learning facilities are not yet desirable, although the study indicates that it is not the worst among the six other universities. It needs improvements in items primarily associated with the motto of this institution, which is "A Leading and Outstanding University" ([https://id.wikipedia.org/wiki/Universitas\\_Pendidikan\\_Indonesia](https://id.wikipedia.org/wiki/Universitas_Pendidikan_Indonesia)

Table 8b shows that UPI is perceived to have similarity with UNPAD: a possible reason is that there is a strong orientation towards the state-owned status of both universities, which presents a dichotomy between state and private colleges. It can be concluded, therefore, that the prospective students perceived UNPAD and UPI based on the status.

## **VI. CONCLUSION AND RECOMMENDATION**

### *A. Conclusion*

The above discussion leads to the following conclusions:

1. Based on the similarity, there are groups strategy based on the perception of prospective students:
  - a. The group that does not have the advantage consists of Widyatama University (UTAMA), Parahyangan Catholic University (UNPAR), and the Bandung Institute of Technology (ITB).
  - b. The group that has obvious advantages are Maranatha Christian University (UKM), Padjadjaran University (UNPAD), Bandung Islamic University (UNISBA), and Indonesia University of Education (UPI). UKM has liked by family, complete learning facilities, and complete sports facilities as their three advantages; UNPAD has the advantage in terms of good advertising; UNISBA has the advantage in terms of the balance between cost and benefit; and UPI also has three advantages in terms of good advertising, popularity, and accessible proximity.
  - c. The group which is based on religious orientation consists of UNPAR and UKM.
  - d. The groups which is based on the status of colleges is comprised of UNPAD, ITB, and UPI which fall into the sub-category of state-owned schools, while another sub-catagory of private universities consist of UNPAR and UTAMA.
2. Learning facilities attribute owned by UTAMA and UNPAR is most likely to be the starting point in developing their competitive advantage.
3. The attribute of good advertising owned by ITB is most likely to be the starting point in developing a competitive advantage by this College.

### *B. Recommendation*

Based on the above conclusions, some recommendations can be proposed:

1. Widyatama and UNPAR should focus on the development of learning facilities as a starting point to enhance their competitive advantage in the education industry in Bandung.
2. ITB can develop its competitive advantage through a good advertising design planning, considering the attributes of a good ad is an attribute that has the smallest Euclidean distance to the ITB compared with 7 other attributes.

## REFERENCES

- [1] Kotler, P., and K.L. Keller (2009), *Marketing Management*, 13 edition, Pearson International Edition.
- [2] Cravens, David W. (2003). *Strategic Marketing*. New York, McGraw Hill.
- [3] Rao, V.R. And J. H. Steckel (1998), *Analysis for Strategic Marketing*, Addison-Wesley, Reading, Massachusetts.
- [4] Schiffman, L. G. and L. L. Kanuk (2000), *Consumer Behavior*, Prentice Hall International, Inc., Upper Saddle River, New Jersey.
- [5] Kotler, P., and G. Armstrong (2002). *Marketing Management*. The Millenium Edition, Prentice Hall, Upper Saddle River, New jersey.
- [6] Peter, J. P. and J. C. Olson. (2000). *Consumer Behavior and Marketing Strategy*, McGraw-Hill, Boston.
- [7] Sekaran, U. (2000). *Research Methods for Bussiness*. New York, John Wiley & Sons.Inc.
- [8] Hair, F. J., R.E. Anderson, R.L. Tatham, W. C. Black (1998). *Multivariate Data Analysis Fifth Edition*. New Jersey, Prentice Hall.
- [9] Neuman, W. L. (2003), *Social Research Methods: Qualitative and Quantitative Approaches*, Allyn and Bacon, Boston
- [10] Malhotra, N.K. (2002), *Marketing Research: An applied orientation*, Pearson Education, Boston
- [11] Kohli, C., and L. Leuthesser (1993). "Product Positioning: A comparison of perceptual mapping techniques," *The Journal of Product and Brand Management*, vol.2, Iss4; Pg.10
- [12] Green, P.E., F.J.Carmone, and S.M. Smith (1989), *Multidimensional Scaling: Concepts and Applications*, Allyn and Bacon, Boston.
- [13] Cox, T.F. and M.A.A. Cox (2001), *Multidimensional Scaling*, second edition, Chapman & Hall / CRC, Boca Raton.
- [14] Sreeja, V.S., Josephine, M.S., Jeyabala Raja, V. Survey on biometric identification system(2018) International Journal of Pharmaceutical Research, 10 (4), pp. 223-226. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057178028&doi=10.31838%2fijpr%2f2018.10.04.050&partnerID=40&md5=7e80dd381531da52577b9443f1b0eb47>
- [15] Hewageegana h. G. S. P, arawwawala l. D. A. M. , ariyawansa h. A. S, tissera m. H. A, dammaratana i. (2016) a review of skin diseases depicted in sanskrit original texts with special reference to ksudra kushtha. Journal of Critical Reviews, 3 (3), 68-73.
- [16] Susi Ari Kristina, Yosef Wijoyo. "Assessment of Pharmacy Students' Clinical Skills using Objective Structured Clinical Examination (OSCE): A Literature Review." *Systematic Reviews in Pharmacy* 10.1 (2019), 55-60. Print. doi:10.5530/srp.2019.1.9