

DESIGN OF THE NEEDS OF EDUCATIONAL SERVICES IN GAGAS CERIA KINDERGARTEN USING INTEGRATION EDUCATION QUALITY AND REFINED KANO

Alif Akbar¹, Dr. Ir. Yati Rohayati, M.T², Ima Normalia Kusmayanti SS., MPd.³

^{1,2}, Major of Industrial Engineering, Industrial Engineering Faculty, Telkom University

¹akbaralif1409@gmail.com, ²yatirohayati@telkomuniversity.ac.id, ³kusmayanti@telkomuniversity.ac.id

Abstract

The importance of education for children of early age the more years the higher. It is also followed by growth in the number of Kindergartens in many provinces in Indonesia, especially in West Java Province which has increased in recent years, with a ratio of more growth of private Kindergarten compared to domestic Kindergarten. It suggests that competition of private Kindergarten is more competitive compared with domestic Kindergarten, one of which is TK Gagas Ceria that is an object in this research. TK Gagas Ceria that has A accreditation, but in the last few years the decreased in applicant from students who previously have taken early childhood education such as Play Group and Toddler in the Gagas Ceria Foundation. The presence of the problem of service Gagas Ceria Kindergarten to make the school need to identify the appropriate service for prospective customers. The study aims to improve the quality of educational services of TK Gagas Ceria using the integration of Education Quality and Refined Kano to identify 21 attributes of the services needs of education needs of TK Gagas Ceria. Based on the results of Education Quality and Refined Kano, there 11 attributes needs to prioritize. The recommendations are formulated based on the results of data processing and analysis involve TK Gagas Ceria sides. These recommendations contain the attributes of services requirements that need to be prioritize as the True Customer Needs.

Keywords: *Kidergarten, Need Analysis, Education Quality, Refined Kano*

1. Introduction

Education is a conscious and planned effort to create a learning atmosphere and the learning process that students actively develop their potential to have have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by him, society, nation and state (Law No. 20, 2003). Kindergarten abbreviated as TK (in Indonesian language) is one of the pre-formal education for children aged four to six years. Kindergarten introduces children to new environments outside their families before they enroll in elementary schools. Kindergarten aids children development of personality, self-potential and attitudes, knowledge, skills and creativity to adjust to their environment and future growth and development. Nowadays, parent's awareness, on the importance of education has been increased especially in West Java Province^[13]. Parents realized importance of education for their children to achieve their dreams in the future. The increased in the number of kindergarten students in West Java Province from 2012-2016 can be seen in Figure I.1

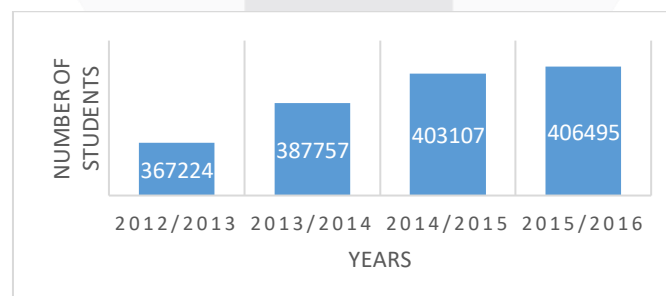


Figure 1.1 Increased the Number of Kindergarten Students in West Java Province^[13]

In Bandung city, Lengkong Subdistrict ranks in the third place with the total of 801 kindergarten students with a compare with number of TK in Bandung available as many as 470 schools. Data above also showed that competitive Kindergarten in Bandung is very competitive. Bandung has 30 sub-districts and Lengkong sub-district is in the first ranks with potential competitors as many as 24 private kindergarten at the sub-district level causing high competitions. Based on the data from the Ministry of Education and Culture, Gagas Ceria Kindergarten is an A-accredited kindergarten in the area of Lengkong Subdistrict with the decree number 051/K/SK/AKR/2016^[14]. However, having A accreditation does not guarantee that Gagas Ceria Kindergarten becomes the first choice of all parents. This can be seen from the decline of external applicants since 2015. There has been Based on the

interviews conducted with the TK Gagas Ceria stakeholder, from 2015 to 2018 applicants. Comparison between the number of external registrars, internal applicants and the number of internal applicants can be seen in Figure I.2.

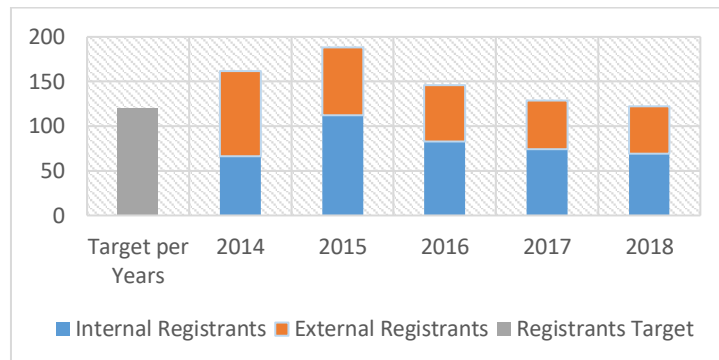


Figure 1.2 Comparison of Internal Applicants, External Applicants, and Target Applicants

This is caused by several factors. One of them is the quality of services that have not met customer expectations. To find out the initial information about the suitability of education services in Gagas Ceria Kindergarten, a depth interview survey was conducted. Based on Table I.2, there are some disadvantages related to education services in kindergarten classes. This is one of the reasons for the decline of internal applicants. Therefore, it is necessary to conduct a need analysis by considering all customer needs that have not been fulfilled the first step in improving the quality of the services of Gagas Ceria Kindergarten.

2. Literature Study

2.1 Kano Model

The Kano model is a method used to categorize attributes of a product or service so it could help to find the need for customer satisfaction^[1]. Noriaki Kano is a Japanese professor who propose Kano models as a tool used to understand customer needs and their impact on customer satisfaction. Kano categorizes the needs of different customers based on how good the need attribute could get customer satisfaction. Categorization of product needs attributes are divided into three categories of needs are as follows^[2]:

1. Must Be

Customers will feel dissatisfied if the performance of the particular attributes is low because the attribute must exist, if it does not exist, the customer will feel disappointed. Customer satisfaction will not increase much, although the performance of these attributes is high. This category is an mandatory criterion that must exist from the product as it should be. Customers ask for compliance for this category.

2. One- Dimensional or performance needs

In this category, customer satisfaction levels has a linear proportion with attribute performance, so high performance attributes will result in a high level of customer satisfaction, and vice versa. Customers expect compliance in this category.

3. Attractive

In this category if the attribute performance is improved then the level of customer satisfaction will increase significantly. But the decline in attribute performance will not have an impact on the rate of satisfaction. Customers are not demanding and do not expect for compliance of this category.

All three attributes are figured into a Kano Model diagram shown in the figure below, where the y axis is the customer satisfaction level while the x-axis is the functional capability of the product.

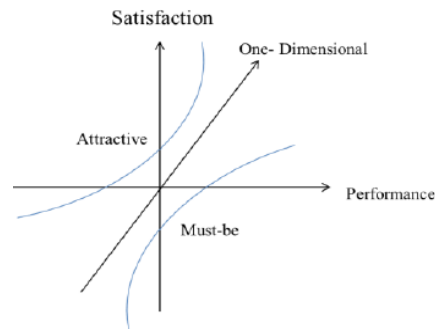


Figure 2.1 Kano Model

In addition, there are also three additional categories of Kano used by considering answers from customers who can bring up other categories. The secondary categories are Indifferent, Questionable, and Reverse^[3]:

1. Indifferent:

In this category, the presence or absence of attribute needs will not affect customer satisfaction. Attributes do not produce satisfaction and also do not generate dissatisfaction, customers do not pay attention to whether these needs are met or not.

2. Reverse

In this category customer satisfaction will decrease if attributes of these needs exist in the product. On the other hand, if the attribute is removed then the customer satisfaction will increase. Thus, attributes will produce dissatisfaction when it is met, and satisfaction when it is not met.

3. Questionable

This category will occur when the respondent's answer to the question from Functional Form and Dysfunctional Form is irrelevant so it raises doubts or misunderstandings toward the questions and responses will not accurate, so the needs can not be clearly defined.

In determining the attribute categories based on the Kano model there are three steps that can be used. First, classify the Kano Model attributes by combining the answers of dysfunctional questions with answers of functional questions. In order to determine Kano Category for each attribute using Blauth formula^[4] can be calculated with several conditions such as:

1. If the value of (one-Dimensional + attractive + must-be) > total value of (indifferent + reverse + questionable), then the chosen value is the maximum value from one-Dimensional, attractive, must-be.
2. If the value of (one-Dimensional + attractive + must-be) < total value of (indifferent + reverse + questionable), then the chosen value is the maximum value from indifferent, reverse, questionable.
3. If the value of (one-Dimensional + attractive + must-be) = total value of (indifferent, reverse dan questionable), then the chosen value is the maximum value from all categories which are one-Dimensional, attractive, must-be indifferent, reverse, and questionable.

After all three steps are done, the last step is to do improvement according to each category for every attribute whether it is Maintained, Prioritized, or Improved.

2.2 Education Quality

Education Quality (EduQUAL) is a method that represents the performance and quality of the education service industry. This method is the result of the development of researchers from the Education Quality Method that focuses more on measuring the quality and performance of the education services industry^[15]. This is because customer satisfaction is a result of the suitability of consumer expectations for the quality of service that they feel.

Based on previous research, the dimensions that will be used as reference measurements must be relevant to the object of research. The selection of dimensions to be used can be seen from the similarities of each study and the similarity of meanings of each dimension. The results of the study of the dimensions of previous research, obtained 5 dimensions that will be used in this study which can be seen in Table 2.1.

Table 2.1 Chosen Dimension

Dimension	Definition
Space and Furnishing	Regarding the arrangement of space, indoor and outdoor spaces, displays and equipment used by students in teaching and learning activities.
Curriculum Structure	The curriculum is owned by the school to support the teaching and learning process that is consistent and provides a balance of activities designed to meet individual needs and encourage students' physical, cognitive, social, and emotional growth
Interaction	The teacher's ability to balance the level of supervision and control in academic and motoric activities based on the age, abilities and needs of each individual student.
Activities	Activities outside of learning in class that support learning such as art, music / movement, nature / science, counting, etc.
Parents and Staff	The process of interaction between parents and teaching staff, including the opportunity to evaluate and communicate information related to children.

2.3 Refined Kano

The Refined Kano method is a development of the Kano Model by considering the level of importance of the attributes perceived by the customer to identify the needs attribute. The Kano model has weaknesses such as not considering the interests of consumers so that it cannot be evaluated in a tapat and detailed manner. The Refined Kano Method has 8 categories based on the level of importance and level of Kano. The following are the categories of product / service needs in the Refined Kano method^[16].

1. Category Highly Attractive

Highly Attractive Category is the result of integration of high importance attributes with attractive Kano categories. The highly attractive category is an effective quality attribute to attract potential targets or new participants and become a competitive advantage. Implementation of this attribute will also increase satisfaction but will not cause dissatisfaction if it is not implemented.

2. Category Less Attractive

The Less Attractive category is the integration of low importance attributes with the attractive Kano category. Less Attractive category is a quality attribute that has little appeal so that its implementation can be considered based on cost factors, etc. Implementation of this attribute will also increase satisfaction but will not cause dissatisfaction if it is not implemented.

3. High Value-added categories

The High Value-added category is the integration of high importance attributes with the One-Dimensional Kano category. The High Value-Added category has a significant contribution to customer satisfaction. Implementing this attribute will increase satisfaction and will reduce satisfaction if it is not implemented.

4. Categories of Low Value-Added

The Low Value-Added category is the result of integration of low importance attributes with the category of One-Dimensional Kano. The Low Value-Added category provides a limited contribution to customer satisfaction so that its implementation can be considered based on cost factors, etc. Implementing this attribute will increase satisfaction and will reduce satisfaction if it is not implemented.

5. Critical Categories

The Critical category is the integration of high importance attributes with the Must-be Kano category. This attribute is very important and is the customer's basic needs. Implementation of this attribute will not have a major effect on increasing satisfaction, but can reduce satisfaction if it is not implemented.

6. Category Necessary

The Necessary category is the result of integration of weak importance level attributes with the Must-be Kano category. The level of implementation of these attributes cannot be prioritized or reduced to consider several factors such as costs etc., but must be maintained so that customer satisfaction is maintained.

7. Potential Category

The Potential category is the result of the integration of attributes of strong importance with the Indifferent Kano category. The level of implementation of this attribute cannot be used as a priority but must be held because it has the potential to be an attractive attribute. Implementation of this attribute has no effect on customer satisfaction.

8. Care-Free Category

Care-Free category is the result of integration of weak importance level attributes with Indifferent Kano categories. Companies can ignore this attribute if there are cost factors, etc. Implementation of this attribute has no effect on customer satisfaction.

Figure 2.2 is an image that represents the grouping of needs attributes based on customer satisfaction stated in the Refined Kano category.

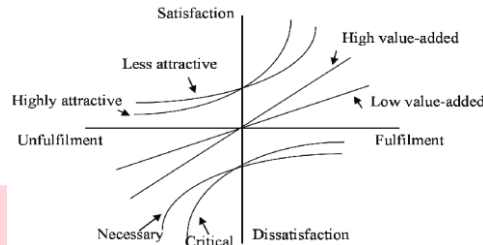


Figure II.2 Model Refined Kano

3. Analysis Data

3.1 Analysis of Data Processing from Education Quality's Questionnaire

Based on the results of data processing on the education quality questionnaire, there are attributes that are categorized weak attributes and strong attributes. In data processing, there are 11 strong attributes and 10 weak attributes as follows:

Strong attributes define that it is important to implement attributes according to prospective customers. The recommended action for the strong attribute with the Attractive Canoe category to Highly Attractive in Refined Kano is the development of attributes. The actions taken on the attributes with the One-dimensional Canoe category to become Highly Value-added and Must-be Critical in Refined Kano were the priority of the procurement of attributes. The recommended action for a strong attribute with the Indifferent Canoe category to be a Potential in Refined Kano is the procurement of attributes but not a priority. There are 11 needs attributes that are included in the strong attribute can be seen in table 3.1.

Tabel 3.1 Strong Attributes

No	Atribut	Kode	NKP
1	Classrooms are bright and have a comfortable temperature for learning and playing	SPF-01	4,78
2	Arranging the room with solid colors to increase children's motivation in learning	SPF-02	4,53
3	Adequate support facilities for parents' accommodation and clean and well-maintained school facilities	SPF-03	4,55
4	Health service performance that is in accordance with children's health needs	SPF-04	4,54
5	Planting basic religious concepts towards the moral values of children's lives	CUS-01	4,59
6	Teachers are able to understand the wants and needs of children	INT-02	4,78
7	Teachers are able to understand the potential of children to develop children's talents	INT-04	4,67
8	There are extracurricular activities in the field of sports for children	ACT-01	4,64
9	There are extracurricular activities in the arts and music for children	ACT-03	4,55
10	Interaction (sharing information about children) between teaching staff and parents who routinely encourage parent involvement in the school program	PAS-01	4,71
11	Responsive and fast response schools for parents' input and complaints	PAS-02	4,80

Weak attributes are interpreted as attributes that indicate the lack of importance of implementing attributes according to prospective customers.. The recommended action for strong attributes with the category of Attractive Canoeing into Low Attractive in Refined Kano is the procurement of attributes but not a priority. The recommended action for strong attributes with the Kano One Dimensional category to be Low Value-added and Must-be to Necessary in Refined Kano is the procurement of attributes but not a priority. While the attribute with the Care-free category is neglect. There are 10 needs attributes included in the strong attributes can be in Table 3.2.

Tabel 3.2 Weak Attribute

No	Atribut	Kode	NKP
1	Variation of play facilities that are safe for children	SPF-05	4,42
2	Children's response to the material they get at school	CUS-02	4,46
3	Indoor and outdoor play and learning times are balanced every day	CUS-03	4,36
4	Linkages between school learning programs and child development	CUS-04	4,41
5	Teachers are able to present learning material well	INT-01	3,90
6	Teachers provide supervision and protection for children	INT-03	4,45
7	There are extracurricular activities in the field of natural science for children	ACT-02	4,47
8	There are extracurricular activities in the field of robotic technology for children	ACT-04	4,21
9	Parents participate in giving feedback to the school	PAS-03	4,45
10	Psychologist's performance in meeting parental consultation needs regarding the development of children's interests	PAS-04	4,52

3.2 Analysis of Data Processing from Kano Models's Questionnaire

Data processing questionnaire of Kano model begins by grouping the needs attribute into the Kano category based on the Kano Evaluation Table and Blauth Formula so that the categories of all attributes can be obtained. This classification is based on respondents' answers from functional statements and dysfunctional statements on each attribute. The needs attributes are grouped into six Kano categories, which are attractive (A), must-be (M), one dimensional (O), indifferent (I), reverse (R), and questionable (Q) as Table 3.3.

Table 3.3 Kano Model's Questionnaires Processing

No.	Kode	M	O	A	M+O+A	I	R	Q	I+R+Q	KANO Category
1	SPF-01	25	32	30	87	18	0	0	18	O
2	SPF-02	16	32	27	75	30	0	0	30	O
3	SPF-03	41	12	22	75	30	0	0	30	M
4	SPF-04	33	18	32	83	22	0	0	22	M
5	SPF-05	16	20	35	71	34	0	0	34	A
6	CUS-01	27	30	29	86	19	0	0	19	O
7	CUS-02	24	26	36	86	19	0	0	19	A
8	CUS-03	35	17	11	63	42	0	0	42	I
9	CUS-04	22	17	34	73	31	1	0	32	A
10	INT-01	19	29	44	92	13	0	0	13	A
11	INT-02	16	37	34	87	18	0	0	18	O
12	INT-03	24	21	31	76	29	0	0	29	A
13	INT-04	32	21	21	74	31	0	0	31	M
14	ACT-01	45	18	15	78	27	0	0	27	M
15	ACT-02	8	39	50	97	8	0	0	8	A
16	ACT-03	10	45	43	98	7	0	0	7	O
17	ACT-04	4	29	41	74	31	0	0	31	A
18	PAS-01	33	27	28	88	17	0	0	17	M
19	PAS-02	38	13	19	70	35	0	0	35	M
20	PAS-03	18	20	41	79	25	1	0	26	A
21	PAS-04	28	20	38	86	18	1	0	19	A

In Table 3.3 it can be seen that there are 9 attributes of needs belonging to the attractive category. 5 attributes included in the one-dimensional category. 6 attributes that fall into the must-be category and 1 attributes that are categorized as the indifferent category.

3.3 Analysis of Education Quality and Refined Kano Integration

Result of analysis from integration of Education Quality dan Refined Kano obtained according to value of importance and Kano category can be seen in Tabel 3.4.

Tabel 3.4 Integration Education Quality and Refined Kano

No.	Kode	KANO Category	Value of Importance	Attribute Code	Refined KANO Attribute
1	SPF-01	O	4,78	Strong	High Value-Added
2	SPF-02	O	4,53	Strong	High Value-Added
3	SPF-03	M	4,55	Strong	Critical
4	SPF-04	M	4,54	Strong	Critical
5	SPF-05	A	4,42	Weak	Less Attractive
6	CUS-01	O	4,59	Strong	High Value-Added
7	CUS-02	A	4,46	Weak	Less Attractive
8	CUS-03	I	4,36	Weak	Care-Free
9	CUS-04	A	4,41	Weak	Less Attractive
10	INT-01	A	3,90	Weak	Less Attractive
11	INT-02	O	4,78	Strong	High Value-Added
12	INT-03	A	4,45	Weak	Less Attractive
13	INT-04	M	4,67	Strong	Critical
14	ACT-01	M	4,64	Strong	Critical
15	ACT-02	A	4,47	Weak	Less Attractive
16	ACT-03	O	4,55	Strong	High Value-Added
17	ACT-04	A	4,21	Weak	Less Attractive
18	PAS-01	M	4,71	Strong	Critical
19	PAS-02	M	4,80	Strong	Critical
20	PAS-03	A	4,45	Weak	Less Attractive
21	PAS-04	A	4,52	Strong	Less Attractive

True Customer Needs is derived from the integration of seducation quality and Refined Kano, which are the need attributes that needs to be improved and prioritized. Thus, the total True Customer Needs total is 11 which consists of 11 priority attributes. Here's an analysis of the 11 True Customer Needs attributes:

1. Classrooms are bright and have a comfortable temperature for learning and playing (SPF-01)
2. Arranging the room with solid colors to increase children's motivation in learning (SPF-02)
3. Adequate support facilities for parents' accommodation and clean and well-maintained school facilities (SPF-03)
4. Health service performance that is in accordance with children's health needs (SPF-04)
5. Planting basic religious concepts towards the moral values of children's lives (CUS-01)
6. Teachers are able to understand the wants and needs of children (INT-02)
7. Teachers are able to understand the potential of children to develop children's talents (INT-04)
8. There are extracurricular activities in the field of sports for children (ACT-01)
9. There are extracurricular activities in the arts and music for children (ACT-03)
10. Interaction (sharing information about children) between teaching staff and parents who routinely encourage parent involvement in the school program (PAS-01)
11. Responsive and fast response schools for parents' input and complaints (PAS-02)

4. Conclusion

Based on the objectives of the study the conclusions are as follows:

1. Based on the research conducted, 21 attributes of the Gagas Ceria kindergarten service needs are grouped into the Education Quality dimension, including Space and Furnishing, Curriculum Structure, Interaction, Activities, and Parent and Staff.
2. Based on the results of Education Quality data processing there are 11 strong attributes that define the importance of implementing these attributes in Gagas Ceria Kindergarten education services according to parents of prospective Gagas Ceria kindergarten students and there is 1 weak attribute that defines the lack of importance of implementing these attributes in Gagas Ceria Kindergarten education services according to parents the kindergarten students Gagas Ceria. The results of Education Quality data processing produce a sequence of priority dimensions to be implemented based on the level of importance in Kindergarten Cheerful education services, namely Parent and Staff, Space and Furnishing, Curriculum Structure, Interaction, and Activities.
3. Based on the integrase results of processing Education Quality and Refined Canoe questionnaire data, nine attributes in the Less Attractive category were obtained, five attributes in the High Value-added category, six attributes in the Critical category, and one attribute in the Care-free category.
4. Based on the results of the integration of Education Quality and Refined Canoe, there were 11 attributes of need that need to be prioritized, and 13 attributes that need to be developed.
5. Based on the integration of Education Quality and Refined Canoes, there are 11 attributes that need to be True Customer Needs

Daftar Pustaka

- [1] Shen, X. X., Tan, K. C., & Xie, M. (2000). An Integrated Approach to Innovative Product Development Using Kano's Model and QFD
- [2] Tan, K.C. & Pawitra, T.A. (2001). 'Integrating SERVQUAL and Kano's Model into QFD for Service Excellence Development', *Managing Service Quality*, vol. 11 no. 6, pp 418-430.
- [3] Wang, T., & Ji, P. (2010). Understanding Customer Needs Through Quantitative Analysis of Kano's model. *International Journal of Quality & Reliability Management*, 173-184.
- [4] Widiawan, K., & Irianty. (2004). Pemetaan Preferensi Konsumen Supermarket Dengan Metode Kano Berdasarkan Dimensi SERVQUAL. *Jurnal Teknik Industri*, 37-46.
- [5] Badan Pusat Statistik. (2017). Jumlah Sekolah, Guru, dan Murid Taman Kanak-Kanak (TK) di Bawah Kementerian Pendidikan dan Kebudayaan Menurut Provinsi tahun ajaran 2011/2012-2015/2016. Retrieved December 8, 2018, from <https://www.bps.go.id/statictable/2015/09/10/1809/jumlah-sekolah-guru-dan-murid-taman-kanak-kanak-tk-di-bawah-kementerian-pendidikan-dan-kebudayaan-menurut-provinsi-tahun-ajaran-2011-2012-2015-2016.html>
- [6] BAN PAUD dan PNF. (2017). Akreditasi PAUD-PNF Kota Bandung. Retrieved April 17, 2019, from <http://jendela.data.kemdikbud.go.id/banpnf/index.php/chome/profil/E571B811-490A-40FC-81E3-A30FC73AD6C2>
- [7] Mahapatra, S. S., & Khan, M. S. (2007). A neural network approach for assessing quality in technical education: an empirical study. *International Journal of Productivity and Quality Management*. <https://doi.org/10.1504/IJPQM.2007.012451>
- [8] Yang, C. C. (2005). The refined Kano's model and its application. *Total Quality Management and Business Excellence*, 16(10), 1127–1137. <https://doi.org/10.1080/14783360500235850>