

# Applying the Kano Model to Explore Students' Service Quality Requirements in a Philippine State-Owned University

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## Abstract

**Introduction:** The importance of providing quality services in higher education cannot be overstated, as it significantly influences the level of satisfaction experienced by students. Education services are now under increased scrutiny as they strive to meet and exceed customer expectations, ushering in a new era of heightened competition. In this landscape, the Kano Model emerges as a valuable tool, offering insights into student preferences and aiding in the strategic alignment of initiatives to surpass student expectations. While the Kano Model has achieved success in technical realms, its potential to revolutionize the field of education remains largely untapped.

**Objectives:** This study investigates the utilization of the Kano Model to assess student satisfaction regarding service quality features in a state university. It aims to analyse student responses to various service features in the campus and explore their priority requirements and expectations, and highlight unaddressed features crucial for meeting student needs.

**Methods:** The study used a quantitative survey research design and the Kano Model to analyse student preferences and understand the variables influencing their satisfaction with quality service features on a university campus experience. A kano survey questionnaire containing 25 variables was developed based on literature, and data were collected from 101 university students using convenient sampling.

**Results:** 20 out of 25 service attributes directly impact student satisfaction. Areas of concern include the lack of clear assessment component weight policies, while students appreciate easy access to campus psychological counselling, the University's ranking, and supportive alumni associations. Essential requirements for students are adequate class lecture hours, campus CCTV monitoring, with indifference towards diverse student organizations

**Conclusions:** The study emphasizes the significant impact of certain service features on student satisfaction and dissatisfaction within the University setting. By utilizing the Kano Model to assess these attributes, it provides valuable insights into student preferences, aiding informed decision-making to improve the quality of university services.

**Keywords:** Kano Model, Higher Education Institution, Student Quality Service Requirements.

## 1. Introduction

The service industry is always changing along with the dynamic nature of various sectors, and education is no different. The education sector provides services by facilitating learning, helping individuals gain knowledge, and developing skills, beliefs, habits, and values. In today's competitive educational landscape, there is a growing emphasis on the significance of services in delivering a comprehensive educational experience [3]. Currently, the dominant perspective asserts that the "customer" of higher education institutions is an individual utilizing their offerings, namely the knowledge gained during their time there [10].

Accordingly, the primary (direct) customer of a higher education institution is the student, and secondarily (indirectly) their employer [6]. The quality of service provided can measure the level of customer's expectations through their voices. One of the techniques in this approach is the Kano Model. The model gives importance to comprehending how customers respond to each feature and prioritizing initiatives based on their potential to satisfy or even delight customers. Even though the Kano Model has proven to be useful in technical fields, its potential for application in education has not received the full recognition it deserves [4]. It is the aim of this research to focus

on the student [6] requirements as the subject of investigation in relation to the quality of education services and using kano model to pay attention not only to the identification of their requirements and expectations, but also to their understanding [4]. There is a dynamic competition prevailing in the education service sector and especially in the different State Universities and Colleges (SUC's). Private colleges start to compete by offering similar programs offered in SUC's. Like any other product, education also has come in the purview of customer orientations and expectations. The requirements of customers or students and their expectations are different and higher. In this study, we have tried to determine how effective those students' expectations are on the satisfaction they get.

## **2. Objectives**

The focus of this study is on understanding how students respond to the variable quality service features in a university and to prioritize initiatives based on their potential to be satisfied using kano model particularly to Investigate the student's priority requirements and expectations towards the University in relation to their learning environment and to understand in meeting the needs of students focused on the features that were not given attention by the institution.

## **3. Methods**

This is a quantitative survey research utilizing the Kano Model to analyse student's preferences in seeking to understand the influencing variables in their satisfaction based on the viable quality service features within a university Campus.

The survey was conducted at Mindanao State University-Main Campus with an estimated average annual student enrollees of around 13,000. It is a multicultural institution of higher learning, a regional state, coeducational, research higher education institution in the Islamic City of Marawi, Philippines. The campus covers a vast area of a thousand hectares with an academic buffer zone of 305 hectares. It has at least 20 academic units including those laboratory high schools in the campus. College students usually shares those facilities by service constituents like the main library, university canteen, pedestrian pathways, dormitories, and many others. A kano survey

questionnaire was developed tailored from the 25 variables established by [3] in which functional and dysfunctional questions were derived. At least two Faculty and five college students of MSU-Marawi were consulted for the inclusion and applicability of the variables (Table 1) within the Campus. There are 288 printed survey questionnaires distributed to officially enrolled college students residing within the campus using convenient sampling, a specific type of probability sampling method which relies on data collection from the population who are conveniently available to participate in the study. Despite of coming from different colleges in the University, students are considered for the same since they share common surrounding experience within the Campus and services from the University. The data thus collected was manually computed and analysed with the aid of Microsoft Excel.

The structure of kano survey questionnaire is done based on the original version of the theory of attractive quality by Kano et al. in 1984 and the kano questionnaire. Questions were constructed through two pairs of customer requirement. How do you feel if that feature is present in the product (functional form of the question), and how do you feel if that feature is not present in the product (dysfunctional form of the question) [1]. Each variable is attributed with two answers to have 25 correlation variants as there are five answers to each question. For each question the student selects one from the five alternative answers. The alternatives are like, must be, neutral, live with it and dislike. The perceptions were then evaluated into quality dimensions on the basis of how the respondents perceived the functional and dysfunctional form of a quality attribute. Figure 1. Illustrates the grading of the responses, depending on the answers, the most frequent answer based on kano model classification of requirements is the graded as Attractive quality (A), One dimensional quality (O), Indifferent quality (I), Must be quality (M), Questionable quality (Q), Reverse quality (R). The next step is to investigate the Satisfaction Coefficient (S) and Dissatisfaction Coefficient (DS) of the students. The student satisfaction coefficient shows the extent to which satisfaction increases if the requirement is fulfilled and decreases if the requirement is not fulfilled.

$$\text{Satisfaction Coefficient (S)} = \frac{A+O+M}{A+O+I+M}$$

(1)

$$\text{Dissatisfaction Coefficient (DS)} = \frac{(-1)(M+O)}{A+O+I+M}$$

(2)

Overall Satisfaction Coefficient (OS) =

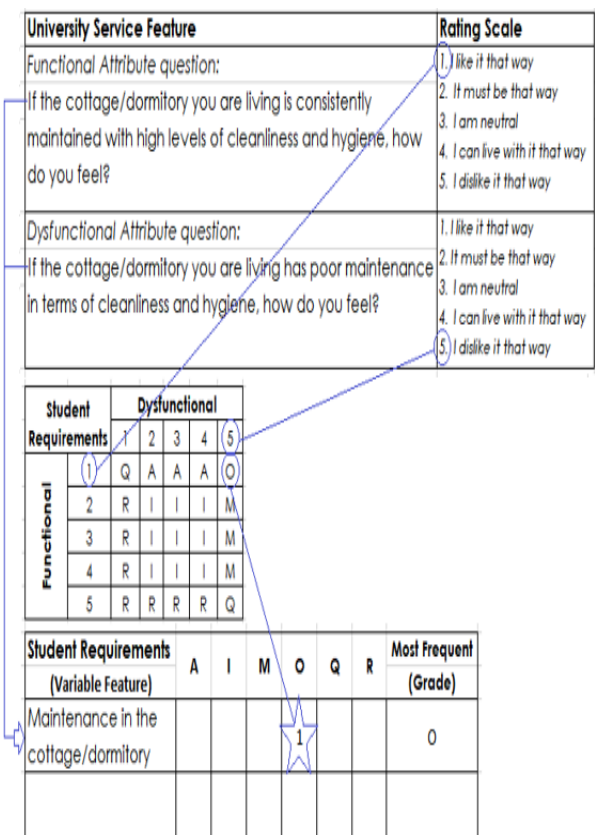
$$S + DS = \frac{A-O}{A+O+I+M}$$

(3)

**Table 1: Student Quality Service Requirements**

Code	University Quality Service Features
SQR1	Instructors/Professors have a Master's/Doctorate Degree in the field they are teaching
SQR2	Sufficient Class lecture hours provided for each course
SQR3	Availability of classroom facilities such as LCDs, projectors, modern equipment, and online classroom options.
SQR4	State-of-the-art facilities and latest equipment in the laboratories
SQR5	Approachability of Instructor's/Professors at all times
SQR6	Approachability of administrative staff members in the college at all times
SQR7	Consistent maintenance of student cottage/dormitory with high levels of cleanliness and hygiene
SQR8	Availability of high-quality food (ex. Pure organic ingredients) and cafeteria services in the campus
SQR9	Visibility of traffic signage, signs on buildings, and bulletin boards in the campus.
SQR10	Availability of convenient shopping services and commercial centre within the campus
SQR11	Availability of diverse and active student organizations to cater to various interests and initiatives
SQR12	Easy access to comprehensive psychological counselling services on campus
SQR13	Availability of convenient and reliable transportation facilities on campus
SQR14	Easily access to scholarship services provided by the university.
SQR15	Availability of diverse and well-maintained sports and entertainment facilities on campus for students.

SQR16	The University holding its place in the world university rankings
SQR17	Positive attitude of the locals (people in Marawi City and Lanao del Sur) towards students
SQR18	Constant organizing of the University for social and cultural services in nearby communities
SQR19	Reliable and high-speed internet access on campus premises
SQR20	Offerings of additional certificate courses on academic program
SQR21	Easy access to library services with a rich database
SQR22	Alumni association supports that monitors your career after graduation
SQR23	Access to seminars, trainings, and workshops
SQR24	The University has clear policies for assigning weights to each assessment component of a course.
SQR25	Equipping Campus premises with CCTV for 24/7 monitoring.



**Figure 1: Categorizing of Student Requirement in Kano Analysis**

The Extent of Satisfaction ranges from 0 to 1; Extent of Dissatisfaction ranges from -1 to 0 and the overall satisfaction ranges from -1 to 1. The higher approximation of satisfaction results to 1 for any attribute indicates that higher is the influence of that attribute on the student satisfaction. Similarly the higher approximation of dissatisfaction results to -1, the greater influence of the attribute which is unfulfilled requirement on the student dissatisfaction.

#### 4. Results and Discussion

With the estimated population of around 13,000 students in the University, 101 have responded out of the distributed 288 questionnaires. By sloven's formula for computing sample size, it is expected to have 10% margin of errors. [7] uses 13% margin of errors.

**Table 2: Demographic Display**

Demographic Features		Number	Percentage
Age	18-20	28	27.72
	21-24	52	52.00
	25-28	19	18.81
	Above 29	2	1.98
	29	29	
Sex	Male	42	41.58
	Female	59	58.42
Year level	1 <sup>st</sup>	21	20.79
	2 <sup>nd</sup>	29	28.71
	3 <sup>rd</sup>	25	24.75
	4 <sup>th</sup>	22	21.78
	5 <sup>th</sup>	4	3.96

Data collected has been tabulated based on the qualities and presents the prioritization of the student requirements according to the recommendations of the kano method. The service features that indicated and proved to be more attractive and important to students in studying at the University in terms of exerting their influence on the satisfaction and dissatisfaction of students are presented in Table 4. The category "Q" is questionable result i.e. whether the student understood the question correctly or marked the answer wrongly. However, no variable has received

Q rate higher than 5%. The evaluation "R" indicates that students did not want that variable attribute.

#### 4.1 Satisfaction of Students

All the variable quality service features considered in the study has over-all satisfaction coefficient leaning to 1 except for "The University having a clear policies for assigning weights to each assessment component of a course" with a value of -0.01 Whereas the closest to one value is the University an "Alumni association supports that monitors the career of students after graduation". This implies that the University can capitalize on enhancing its quality services among these featured attributes if it wants to influence the satisfaction of the students to the University. Figure 2 and 3 display the student's satisfaction and dissatisfaction coefficients value on each quality service featured.

#### 4.2 Attractive Requirements

Table 4 indicates three requirements which are under attractive category. These attributes include "Easy access to comprehensive psychological counselling services on campus", "The University holding its place in the world university rankings", and "Alumni association supports that monitors student's career after graduation". This indicates that students will be more satisfied if these attributes are present. Therefore, it is highly needed to consider the four mentioned attractive attributes since it can potentially increase satisfaction of students.

#### 4.3 Must-be Requirement

Only two variable attributes were categorized as must-be requirements the "Sufficient Class lecture hours provided for each course" and "Equipping Campus premises with CCTV for 24/7 monitoring". Both attributes should be met automatically but meeting only these requirements does not lead to satisfaction of the customer. It can be considered as a minimum level that the University should have as an institution [9].

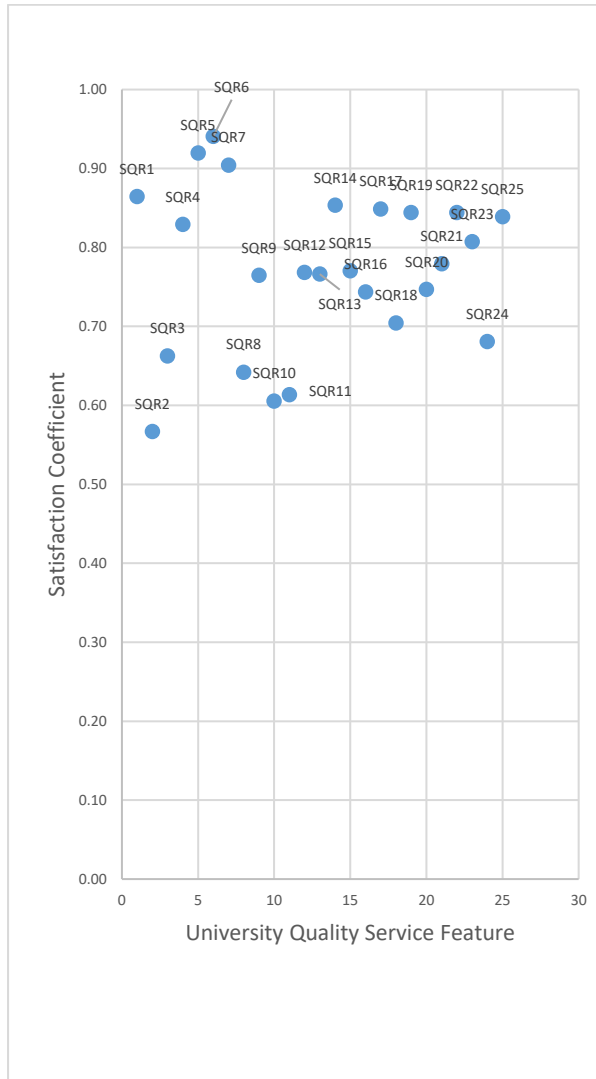


Figure 2. Student Satisfaction Coefficient

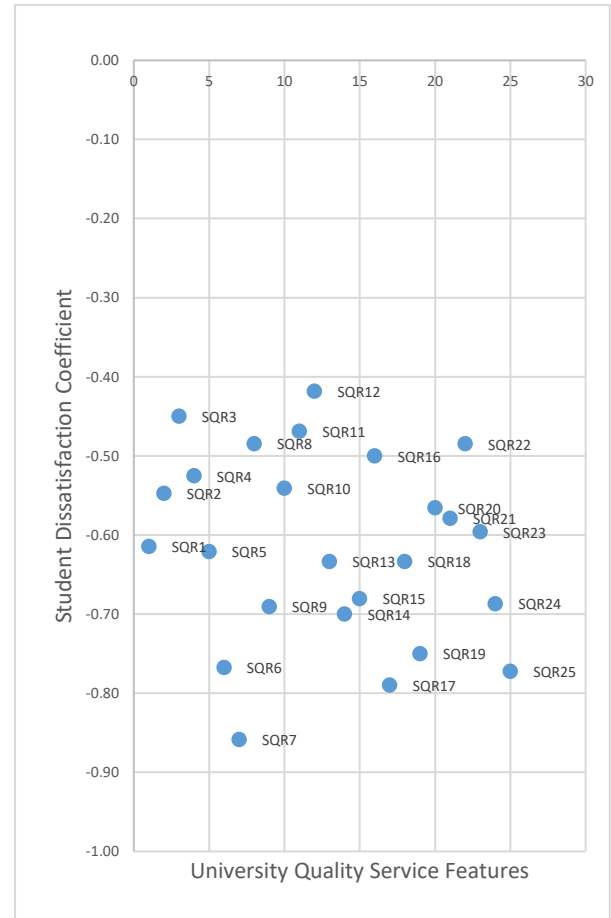


Figure 3. Student Dissatisfaction Coefficient

#### 4.4 One Dimensional Requirements

These requirements are of the “standard type” or the basic attributes expected by the students from the University. Pertaining to the study done 20 out of the 25 variable attributes are categorized as one dimensional (see Table 4). These requirements linearly increase the satisfaction of students [4]. As long as the University increase its quality service performance level then more likely it increase the satisfaction of students.

#### 4.5 Indifferent Service Features

There’s a lone variable attributes that is categorized as indifferent, the “Availability of diverse and active student organizations to cater to various interests and initiatives” of the students. This variable attribute cannot be able to state whether it can increase or decrease the perceived quality service of the University to the student. The University may not focus about it though it should not be completely ignored [11].

**Table 3. Classification of University Quality Service Features Based on Kano's Model for all Students**

Code	Frequency of Replies							Category	SS	SD	OS
	A	I	M	O	Q	R	Total				
SQR1	26	11	15	44	4	1	101	O	0.86	-0.61	0.25
SQR2	17	26	35	17	3	3	101	M	0.57	-0.55	0.02
SQR3	27	27	17	29		1	101	O	0.66	-0.45	0.21
SQR4	33	14	17	35	1	1	101	O	0.83	-0.53	0.30
SQR5	29	7	8	51	3	3	101	O	0.92	-0.62	0.30
SQR6	18	5	15	61	1	1	101	O	0.94	-0.77	0.17
SQR7	7	7	26	59	1	1	101	O	0.90	-0.86	0.05
SQR8	21	29	16	31	3	1	101	O	0.64	-0.48	0.16
SQR9	14	16	29	38	1	3	101	O	0.76	-0.69	0.07
SQR10	15	30	22	31	1	2	101	O	0.61	-0.54	0.06
SQR11	22	29	21	24	4	1	101	I	0.61	-0.47	0.14
SQR12	38	19	16	25	2	1	101	A	0.77	-0.42	0.35
SQR13	19	18	24	40			101	O	0.77	-0.63	0.13
SQR14	19	11	25	45		1	101	O	0.85	-0.70	0.15
SQR15	14	17	23	43	1	3	101	O	0.77	-0.68	0.09
SQR16	30	20	22	28		1	101	A	0.74	-0.50	0.24
SQR17	11	10	34	45		1	101	O	0.85	-0.79	0.06
SQR18	16	21	30	34			101	O	0.70	-0.63	0.07
SQR19	13	12	23	52		1	101	O	0.84	-0.75	0.09
SQR20	24	19	24	32	2		101	O	0.75	-0.57	0.18
SQR21	23	17	18	37	5	1	101	O	0.78	-0.58	0.20
SQR22	39	12	22	26		2	101	A	0.84	-0.48	0.36
SQR23	24	16	16	43	1	1	101	O	0.81	-0.60	0.21
SQR24	8	23	27	41	1	1	101	O	0.68	-0.69	-0.01
SQR25	13	10	39	39			101	M/O	0.84	-0.77	0.07

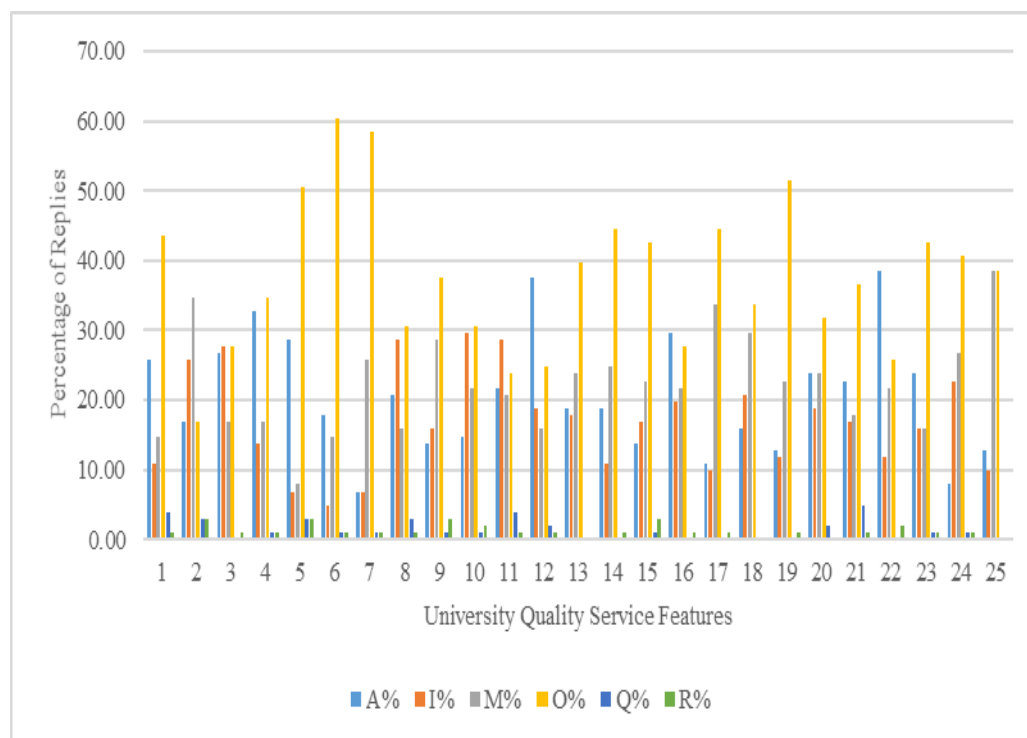


Figure 4: Frequency of Kano survey Responses

#### 4.6 Cronbach's Alpha

Using MS Excel calculations, the Cronbach's Alphas was quite strong. An alpha value ( $\alpha$ ) of the functional (positive question form) is 0.88, while  $\alpha$  of the dysfunctional (negative question form) is 0.95. The acceptable Cronbach alpha was widely recommended by [2] that it should be within the range of 0.65 to 0.95. Therefore, the computed Cronbach Alpha shows that it was within the range, hence the questionnaires used for this study and the results obtained were both reliable for improving the University quality service features.

#### 5. Conclusion

The study thoroughly examines student preferences and satisfaction with university service features, emphasizing the profound influence of these features on student satisfaction and dissatisfaction. By using the Kano Model, the research provides valuable insights into the intricate nature of student preferences, shedding light on elements that significantly impact satisfaction within the University environment. The integration of the Kano Model's classification of requirements identified various quality attributes that impact student satisfaction. By recognizing and prioritizing these influential factors, the study

recommends that the University implement targeted improvements to enhance the overall educational environment for its students. The classification provides a comprehensive understanding of how different attributes influence satisfaction, supporting informed decision-making to enhance quality services.

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