

Applying the Kano Model to Quality Improvement within Higher Education: An Applied Study in the World Islamic Science and Education University – Jordan

Ayat "Mohammad Esam" Saed MOHAMMAD

Business and Finance Faculty, The World Islamic Science and Education University (WISE), Amman, Jordan
P.O Box 1101, Postal Code 11947, Amman, Jordan; E-mail: dr_ayatt@yahoo.com

Abstract

The aim of this study was to determine the requirements of students with regards to the quality of services provided by the Management Department at the World Islamic Sciences and Education University as well as the role of each requirement needed to achieve student satisfaction. To carry out this study, the expectations and perceptions the students had regarding the quality of services provided compared to what was actually provided were analyzed. The negative gaps were then identified and the resulting characteristics and requirements of these gaps were introduced into a two-dimensional Kano model in order for the customer's voice to be measured. The quality of the requirements needed was then divided into five categories. In order to be more reflective of reality, the best value and worst value of each requirement was calculated. This helped to determine the role that these requirements played in either increasing or reducing the satisfaction or dissatisfaction of students.

Keywords: Kano Model; quality; higher education; World Islamic Science and Education University; Jordan.

1. Introduction

Quality has become the main factor for customers when making the choice of selecting products. Organizations have begun to venture and focus in this area in order to determine the factors that make customers buy their products as oppose their competitors' products. The process of researching the factors that govern the customer's decisions involved carrying out a comparison between the quality of a good and poor product. This was shown to be very important as customer dissatisfaction with the product means that the organization will face sale losses which can in turn affect the production of the product (Al-Hawary, 2013; Abbad & Al-Hawary, 2014).

Higher education institutions have become more and more aware of the changes and challenges that are facing organizations. The main change and challenge that has been acknowledged has been the effect that an increase in competition between organizations has. This increase in competition forces organizations to become more susceptible to change and development. Organizations must focus on their customers in order to survive and develop their capabilities. As a result, institutions of higher education are trying to identify the important characteristics that should be present in a service in order to help comply with customer's needs, thus helping to increase their reputation.

One of the most important challenges universities tend to face is finding the strategy required to design studies that enable them to identify and clarify the needs and expectations of their current and future customers. Management literature and previous studies on the quality of education services make it clear that the improvement of higher education services has been addressed from several perspectives and in different ways by many researchers. Many researchers have addressed student satisfaction by researching various factors that influence student satisfaction with the services offered at different universities in

different countries. Students cited various factors such as teacher characteristics, content of instructional materials, teaching methods and assessment methods (Butt et al., 2010; Liu, 2008; Pavlina et al., 2011; Parpala et al., 2007; Ghiat et al., 2011; Buck & Trauth-Nare, 2009; Mahboube, 2012; Anna, 2018). There have been many researchers that have dealt with students in university education and their satisfaction with the services that their universities offer. However, only a few of them dealt with factors that contribute to the increase or decrease of student satisfaction. Therefore the researcher found it important to identify the factors that affect students' satisfaction with the quality of services provided in university education.

This research aims to identify the ideal situation and quality that students seek from services provided by the World Islamic Sciences and Education University. This was carried out as a field study and based on the student's perspectives. The services were distributed according to their type and nature according to the Kano model. The services were then classified according to their importance and impact on increasing or reducing student satisfaction levels and were compared to the current situation in order to identify the gap between what students expect from the quality of services offered already and those identified after the experiment. This study aimed to help increase students' satisfaction with the quality of services provided by the university.

2. The concept of quality

The scholars did not agree on one definition of quality because the concept of quality is related to customer's requirements and expectations which is subjective. However, there is a general consensus that quality aims to satisfy the beneficiaries (Al-Hawary & Harahsheh, 2014; Al-Hawary & Al-Menhaly, 2016). One of the most popular definitions of quality is

the definition made by the American Society for Quality, which the researchers pointed out (Render & Heizer, 2000, p. 171). According to this definition, quality is the body and the overall characteristic of a product or service that appears and reflects the ability of this product to satisfy explicit or implicit needs. Quality has also been defined as; degree of preference, match usage, matching requirements, and customer focus.

In this study, the researcher focuses on the client to create satisfaction and happiness by satisfying his desires and reducing his levels of resentment. Thus, the definition of quality here is a set of comprehensive characteristics in goods and services that affect the meeting of the explicit and implicit customer needs. The concept of quality is related to the beneficiaries' perspectives. It can therefore be said that the concept differs according to the individual, a group or society as a whole.

3. Quality from the perspective of the customer

The customer considers that quality is the organizations ability to meet the needs and satisfaction desired. This can be through the use of various competitive strategies that challenge the competitive market conditions to create customer value (Al-Hawary & AL-SMERAN, 2016; Alshurideh et al., 2017; Alolayyan et al., 2018; Al-Hawary & HUSSINI, 2016). It is known that the smaller the distance between the organization and its customers the greater it can hear and realize the customer's needs and views. In turn, the organization will be able to offer products that suit those needs in the appropriate form, time, place and price.

4. Customer satisfaction and the way to happiness

Focusing on the needs of the customer is the driving force behind the term of quality and product improvement. The organization must be good at listening to customer needs and desires. In order to do this, a full understanding of the customer's internal processes as well as their future needs to be determined (Al-Hawary, 2013; Metabis & Al-Hawary, 2013).

To translate customers' desires into quality standards, marketing management is required to determine what the customers are requesting. This can be done by studying and identifying the customer's behavior and utilizing this knowledge into appropriate product designs that satisfy customer desires at the required level. When making a purchase, the customer will be aware that the organization is constantly trying to satisfy the needs and desires of its customers. This will lead to the belief that the product he acquired will always be the best. The Kano model reflects this customer importance and ensures that customer satisfaction is a primary goal in achieving success and continuity.

Evans asserts that the relationship between quality and customer expectations for the product is determined by three basic phases (Evans, 2005: 48):

1. Study customers and understand their requirements and expectations about the product.
2. Design the product according to the customer's expectations.
3. Monitor manufacturing processes to ensure that products are manufactured to fit pre-set specifications.

5. Kano Model

There are many models that have studied and categorized customer requirements to help organizations understand their customers. Among these is the Kano Model. This is a model used by many researchers and practitioners to understand their customers' voice in order to influence their satisfaction levels

(Arash, Somaye, Hossein, Mahmoud, Rahbar, 2017; Feng-Han, Sang-Bing, Yu-Cheng, Cheng Fu, Jie, Jiangtao, Zhiwen, Yong, 2017; Hyejong, Junghwan, Youngjung, 2018).

The KANO Model classifies the characteristics of services or products by testing the relationship between customer satisfaction and the function performed by the product or service. These characteristics are classified into six levels depending on the degree of satisfaction achieved. The first level includes the elements of the most attractive quality as well as the characteristics of the service or the product which leads to increased customer satisfaction. The second level includes the elements of quality which have a positive linear relationship with customer's satisfaction. Therefore, the more these elements are applied the higher the levels of customer satisfaction and vice versa.

The third level is the quality that all elements must achieve and is unavoidable in any service or product. This means that the loss of these elements will reduce customer satisfaction levels and the presence will not increase satisfaction levels.

1. Basic Factors: Dissatisfaction factors are basic requirements that must be well mastered but this does not create satisfaction because the client believes that their existence is necessary.
2. Attractive factors: Satisfaction factors contribute to the increase in satisfaction and happiness of the customer, whereas, if it not available, does not create the customer's resentment. All marketing efforts focus on this factor in order to make the organization superior.
3. Performance factors: These factors, which if found, will improve the product performance and thus increase the customer's satisfaction. When it declines, the performance of the product well decline and thus decrease customer satisfaction.

The Kano Model evolved over several periods of study and use by researchers. Wittell and Löfgren in 2013 and Potra et al. in 2017 have shown that the Kano Model has received considerable attention from researchers and academics. The KANO Model works primarily to classify services or product characteristics in order to test the relationship between customer satisfaction and the function performed by the product or service. These characteristics are classified into six levels depending on the satisfaction degree that these characteristics achieve for the customer:

1. Must be (M): These are the necessary requirements that must exist and where their absence creates discomfort for the customer, i.e., their absence may create a state of dissatisfaction with the customer while their presence does not cause an increase in the levels of satisfaction.
2. One-Dimensional (O): The characteristics at this level increase satisfaction levels while their absence leads to increased levels of dissatisfaction. Such characteristics create customer loyalty.
3. Attractive (A): Characteristics at this level are welcomed by customers while their absence may not cause any satisfaction level disturbance. These are the customers' characteristics for happiness.
4. Reverse (R): Characteristics at this level should be eliminated because they destroy customer satisfaction levels and their absence is better.
5. Indifferent (I): These characteristics that do not affect the satisfaction levels neither by their presence or their absence.
6. Questionable (Q): The result of this question indicates that the question was not correct or that the result (the answer) was not logical (Wang & Ji, 2010; Garibay et al., 2010; Rashid et al., 2010; Haegeun Song, 2018)

Using the Kano method, customers' requirements are determined by asking double questions. The first question was always in the form of a positive question and the second in a negative form, both regarding the same item. There were five possible answers to each question. These included: Must be

available, neutral, desirable and undesirable. The answers were then integrated until the classification of customer requirements into six levels according to their answers, was possible.

6. Research questions

1. What are the satisfaction levels of the university students with regards to the current situations compared to the ideal situations as indicators of the quality of the business department and what it offers?
2. According to the Kano Model, where do the indicators with a meaningful negative gap belong to with regards to quality attribute?
3. What is the extent that any one of these indicators is decreasing customer dissatisfaction?

7. Research methods

In order to answer the research questions, the researcher adopted a special methodology consisting of four steps. First, the researcher reviewed previous studies and theoretical literature on the research subject and consulted with academics and experts in the field in order to propose different quality characteristics that may be used to collect primary data from the research community (the university). In the second step, the researcher designed a double question questionnaire that was distributed to the respondents who consisted of students studying at the Department of Business administration at the Faculty of Finance and Business in the World Islamic Sciences and Education University. The students selected had finished at least one semester. The questions asked were regarding the characteristics of the quality of service. Each question was designed in both the negative and positive form and the data collected was to be distributed between the six levels of Kano Model. In step four, the researcher carried out the necessary analysis of the retrieved questionnaires which were used to reach the last step, the results. In this step, the classification of characteristics was carried out and comparison was made. The information obtained provided the university with guidance as to where improvement was required in order to increase customer satisfaction and thus achieve competitiveness and success.

The study population was all the bachelor's level students in the Business Administration Department of the Faculty of Finance and Business at the University of World Islamic Sciences and Education University. In order to determine the sample number, the university's statistics from admission and registration unit was reviewed. The number of students in the Department of Business Administration was established to be 300, 135 of whom were in the second semester or above. The questionnaire was distributed to all participating students to take their responses and so that the outcomes could be analyzed and the research objective reached.

8. Study Tool (Kano Questionnaire)

This questionnaire is designed to include a pair of questions about each of the customer's requirements. The researcher found that the statements that measured the quality of service provided in the Department of Management were based on previous studies (Mahboube, 2012). Professors concerned with the subject of quality were asked to ascertain the relevance of the statements to the study. Each question consisted of two parts: The first asking how the customer would feel if the specified property was present in the service and the second how they would feel if it was absent. These questions were answered by selecting the suitable answer from a number of multiple choice options. An example of the questions asked: 'How would you feel if we provided you with updated teaching materials?' An example of the answer options: Better, it should

be so, neutral, I can live without it, and I do not prefer it. The second part of the same question was: 'What would you feel if we did not provide you with updated teaching materials?' The choices of the answers were the same as the first question. Responses are collected from customer trends and then assessed through quality dimensions based on customer responses to the two questions as described above relating to different quality characteristics to be studied. If the customer answered the question 'what would you feel if we provided you with updated teaching materials?' with 'I prefer to' and the answer of the opposite question of 'what if we did not provide you with updated teaching materials?' with 'neutral', the two answers were combined together and used to determine the type to which this property belongs, for example 'A', which means that it is attractive. The same analysis was carried out for all the questions. If the merging of the two answers established the classification 'I', this means that the property was not important and does not make a difference for the customer and can do without it. Therefore no extra value is paid when you offer this service. As for the classification 'Q', it establishes that the question was not raised correctly, that it was not prepared in an appropriate manner or that the customer did not understand the question or that the wrong answer was given by mistake. If the answers to both questions got the 'R' tag, this shows that the quality of service was not only undesirable but the customer expects to reverse it completely.

9. Best value and worst value

Factors that increase satisfaction or reduce customer dissatisfaction can be identified by measuring the best value and the worst value for each quality indicator. The best value can be calculated by collecting responses to 'attractive' and one-dimensional values and dividing them by the total of one-dimensional responses which include the responses of 'must-be' and 'indifferent' responses. The worst value can be calculated by collecting the 'must-be' and 'one-dimensional' responses and dividing them by the total of One-dimensional values which include; 'must-be', 'attractive' and 'indifferent'. Based on these equations, the best value indicates the degree to which customer satisfaction will be increased by improving the quality factor in question, whereas, the worst value will indicate the degree to which customers will be less satisfied when they are not interested in improving the quality of the factors individually.

To explain, the numbers of the worst value and the best value range from zero to one. The nearer the number to one the greater impact it will have on increase customer satisfaction. The closer the value of the worst value to one, the more important it will be to reduce the levels of customer dissatisfaction. However, if the value is zero then the element has a weak effect on satisfaction levels. The calculation of these values enables us to understand the extent to which the studied characteristics affect customer satisfaction and thus help us to focus on better values and improve them to protect customers from the worst values.

10. Statistics and results

The perceptions and expectations about the quality of educational services, as a field study involving university students, were compared using the highest gap and the lowest gap determined.

In the first phase of the study, the student's perception and expectation from the field of educational services were compared. Using a correlated t-test, 41 of the factors in the table were analyzed and used as program quality indicators to identify customer requirements. The results revealed that 37 items out of 41 had a negative gap at a significance level of 0.05 and were therefore established as the representatives of customers ($p < 0.05$).

QUALITY MANAGEMENT

Row Requirements	Means of perceptions	Means of expectations	Mean gap	T	Sig.
1. Excellent universities will provide more courses in the scientific stream throughout the program.	3.51	3.91	-0.416	-3.488	0.001
2. Excellent universities will provide incentives and more advanced facilities to improve the educational and research activities of students (e.g. providing coupons for book, credits for duplication, etc.)	3.42	4.20	-0.784	-6.752	0.000
3. Excellent universities will provide updated material regularly and offer follow up of modern scientific findings.	3.44	4.32	-0.451885	-7.764	0.000
4. Excellent universities will provide a more suitable setting for the business lab (improved lighting, ventilation, chairs, etc.)	3.55	4.41	-0.860	-7.138	0.000
5. Excellent universities will provide more appropriate settings for the site (lighting, ventilation, chairs, etc.)	3.44	4.35	-0.912	-7.77	0.000
6. Excellent universities will provide more Acquisition of IT skills by the students.	3.57	4.23	-0.659	-6.033	0.000
7. Excellent universities will provide a more appropriate setting and for the library. Light, ventilation, chairs, voice control, etc. should be strictly controlled.	3.78	4.30	-0.526	-5.311	0.000
8. Excellent universities will provide a wider variety of courses during the program that students may select.	3.66	3.92	-0.257	-2.424	0.017
9. Excellent universities will provide appropriate mechanisms to students that will help them to cope with their problems in life and to make sensible decisions.	3.55	4.00	-0.451	-4.049	0.000
10. Excellent universities will be more accepting of criticisms (for professors).	3.58	3.86	-0.287	-2.230	0.027
11. Excellent universities will have high ability professors with regards to motivating the students about any issues relating to subjects.	3.78	4.17	-0.385	-3.526	0.001
12. Excellent universities will provide the correct settings for the classroom. These settings include; light, ventilation, chairs, sound control etc.	3.40	4.09	-0.694	-5.779	0.000
13. Excellent universities will show high abilities in relaying information by the professors to the students	3.83	4.25	-0.422	-4.122	0.000
14. Excellent universities provide the students with the skills needed to understand how to conduct learning learn as oppose to what to learn.	3.63	4.88	-0.443	-3.724	0.000
15. Excellent universities will provide reliable assessment standards early on in the academic year.	3.67	4.08	-0.408	-3.136	0.002
16. Excellent universities will provide more friendly communication between professors and students.	3.87	4.30	-0.426	-4.211	0.000
17. Excellent universities will exist more Encouraging the students to be involved in the teaching-learning process	3.87	4.13	-0.266	-2.517	0.003
18. Excellent universities will provide the right amount of time to study a subject matter.	3.69	4.04	-0.349	-3.095	0.002
19. Excellent universities will carry out process-oriented assessments in which a high portion of the final score is to be attributed to activities conducted throughout the semester	3.54	3.94	-0.398	-3.595	0.000
20. Excellent universities will exist more interested professors in answering the student's questions	3.8	5.10	-0.303	-2.818	0.006
21. Excellent universities will enable students to carry out independent research in business studies.	3.84	4.14	-0.306	-3.152	0.002
22. Excellent universities will provide clear assessment standards.	3.68	4.13	-0.452	-4.453	0.000
23. Excellent universities will allow more students to teach the courses of business.	3.76	4.04	-0.277	-2.485	0.014
24. Excellent universities will provide more horizontal order and coordination of subjects studied during the program.	3.81	3.97	-0.154	-1.689	0.094
25. Excellent universities will provide more coordination between the content of exams and the material taught.	3.83	4.09	-0.258	-2.534	0.012
26. Excellent universities will encourage practical activities such as research studies and will account for this in the exam score.	3.64	4.02	-0.379	-3.220	0.002
27. Excellent universities will ensure an appropriate level of course materials so they are neither too simple nor too difficult.	3.75	4.02	-0.262	-2.493	0.014
28. Excellent universities will provide more developmental evaluations (mid-term exams).	3.64	3.76	-0.124	-1.081	0.282
29. Excellent universities will allow for changes and developments with regards to how the professor will convey the course material.	3.90	4.17	-0.263	-2.576	0.011
30. Excellent universities will take into account the physical per capita and therefore provide appropriate classrooms.	3.74	4.11	-0.376	-3.296	0.001
31. Excellent universities will have a relevant syllabus for professors to follow.	3.85	4.20	-0.346	-3.189	0.002
32. Excellent universities will provide developed and advanced mental measurement tools in the business lab.	3.5	4.04	-0.540	-4.914	0.000
33. Excellent universities will provide regular checks on the content of the course material.	3.59	4.15	-0.555	-5.457	0.000
34. Excellent universities will provide students with methods of enhancing learning processes.	4.00	4.09	-0.090	-0.226	0.822
35. Excellent universities will ensure the availability of mental-educational measurement tools for students.	3.57	4.06	-0.491	-4.622	0.000
36. Excellent universities will provide the principles and fundamentals of business administration as a science and focus on the skills and knowledge required.	3.80	4.23	-0.432	-3.998	0.000
37. Excellent universities will carry out regular evaluations of educational progress of the students and offer feedback.	3.53	4.15	-0.618	-6.003	0.000
38. Excellent universities will provide more encouragement to their students to think.	3.61	4.13	-0.521	-5.013	0.000
39. Observing the order and discipline of the professor while entering and leaving the classroom.	3.64	3.92	-0.278	-2.431	0.016
40. Excellent universities will provide more coordination and integration of course materials during the program.	3.69	4.06	-0.364	-3.296	0.001
41. Excellent universities will attribute a suitable final score to the final exam.	3.83	3.98	-0.153	-0.711	0.478

The analysis shows the difference between the expectations of the students and what they actually found in the quality of services provided. It was shown that many requirements obtained negative gaps and achieved a gap between the ideal situation of what students want and the real situation. The gap was greatest for the requirement number five followed by the requirement four, two and finally the number six.

As shown in the table, there are some requirements that have a low negative gap. Requirement 34 had the lowest negative difference followed by 28, 41 and finally 24, which is excluded in the second phase of this study. This was done in order to focus on the requirements that affected the confidence levels that were considered in the research.

The researcher asked the two pair questions for about the 37 items that have a negative gap at a confidence level of 95%. These elements were introduced into a two dimensional model

in order to show to which class of customer requirements each of these elements belongs to. The results of the study showed that 19 of these requirements were rated 'O', since the presence of these requirements increased student satisfaction and where their absence increases their dissatisfaction. These variables were found to create student loyalty. At the same time, five of these requirements were rated 'A' as these variables created customer delight and at the same time did not create dissatisfaction. Eleven variables have a rating of 'I' and one variable had an 'R' classification. This means that this variable must be absent because its existence creates dissatisfaction. Finally one variable was rated as 'M'. This rating should be taken care of because its presence is necessary and its absence creates a state of dissatisfaction.

To be more accurate and to make it more expressive of the role played by each variable in increasing the satisfaction or

dissatisfaction of students, the best value and the worst value were calculated for each variable in order to clear the contribution of each variable in increasing or decreasing the students

satisfaction. This was done in order to provide more accurate information to the decision makers at the university.

11. The Results of Kano's Questionnaire Analysis

WORSE	BETTER	total	Grade	Q	R	I	A	O	M	Code
				Questionable	Reverse	Indifferent	Attractive	Performance	Must-Be	
-0.24	0.29	135	R	5	58	45	10	11	6	# 1
-0.4	0.6	135	A	8	5	36	38	35	13	# 2
-0.55	0.55	135	O	4	8	36	19	49	19	# 3
-0.56	0.54	135	O	6	4	31	24	43	27	# 4
-0.56	0.57	135	O	11	4	30	23	45	22	# 5
-0.51	0.66	135	O	4	8	27	33	48	15	# 6
-0.57	0.56	135	O	5	8	31	22	46	23	# 7
-0.38	0.5	135	I	6	24	45	20	32	8	# 8
-0.41	0.61	135	O	9	10	36	32	39	9	# 9
-0.41	0.51	135	I	14	12	39	25	30	15	# 10
-0.41	0.61	135	O	6	15	33	34	36	11	# 11
-0.49	0.5	135	I	11	20	27	26	26	25	# 12
-0.55	0.68	135	O	7	13	26	26	52	11	# 13
-0.5	0.54	135	O	4	18	33	24	37	19	# 14
-0.35	0.52	135	I	10	25	35	30	22	13	# 15
-0.42	0.59	135	O	6	18	35	29	36	11	# 16
-0.33	0.63	135	A	11	19	35	36	31	4	# 17
-0.34	0.54	135	I	7	18	41	32	27	10	# 18
-0.37	0.44	135	I	6	25	48	18	28	10	# 19
-0.53	0.55	135	O	5	25	29	20	38	18	# 20
-0.43	0.59	135	O	7	24	33	26	35	10	# 21
-0.46	0.55	135	O	8	23	35	21	36	12	# 22
-0.42	0.6	135	A	7	21	26	36	28	17	# 23
-0.52	0.59	135	O	6	22	29	22	41	15	# 25
-0.31	0.5	135	I	6	22	43	31	23	10	# 26
-0.43	0.39	135	I	10	29	37	18	19	22	# 27
-0.52	0.65	135	O	6	29	23	25	40	12	# 29
-0.59	0.57	135	O	9	24	26	16	42	18	# 30
-0.19	0.54	135	I	6	20	45	43	16	5	# 31
-0.3	0.56	135	I	7	19	43	33	28	5	# 32
-0.41	0.63	135	O	8	23	29	32	34	9	# 33
-0.62	0.64	135	A	9	25	28	37	28	8	# 35
-0.39	0.61	135	M	7	19	33	32	34	10	# 36
-0.48	0.66	135	O	7	24	24	30	39	11	# 37
-0.41	0.62	135	A	10	19	30	33	33	10	# 38
-0.42	0.49	135	I	5	28	39	21	29	13	# 39
-0.55	0.6	135	O	4	21	27	22	45	16	# 40

12. Conclusion

This study aimed to identify the needs and requirements of in the Department of Business Administration at the University of Islamic International Sciences. This was done in order to determine the role of each factor needed in satisfying the needs and desires of the students and to create loyalty and satisfaction. For this purpose, gaps were calculated by carrying out a comparison between the expectations of the students about the service to be provided in the university and the department and their feelings about what they have already received from the services. In order to reveal the most important quality requirements that reflect the voice of the customer, the results were analyzed and the difference between what the students expected and what they have already obtained was determined.

The requirements were then applied to the Kano Model and were categorized into five types: Attractive, one-dimensional,

must-be, reverse and indifferent elements. At this stage, 19 variables were given a rating of 'O' and one variable was rated 'A'. These qualities should be taken into account and worked on as they have a big impact on student satisfaction. Furthermore, it was established that the strategies of decision makers should be directed towards development and change in order to avoid the students' dissatisfaction. To do this, the implementation potential and the university's available resources aiming to create students' satisfaction and happiness must be acknowledged.

Finally, this study helps decision makers to prioritize and direct their competitive strategies towards creating the loyalty and satisfaction of students in order to help them raise their competitiveness among universities. The results of this study should contribute to raising the quality of services provided in the studied department and priorities should be set. From this study, it is hoped that decision-makers will take the outcomes into account and establish an implementation plan to improve the quality of services provided to their students.

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