Sinkron : **Jurnal dan Penelitian Teknik Informatika**
Volume 8, Number 2, April 2024
DOI : https://doi.org/10.33395/sinkron.v8i2.13599
e-ISSN : 2541-2019
p-ISSN : 2541-044X

Satisfaction Analysis of The Establishment of a Website-Based Rank System Using Customer Satisfaction Index (CSI) And Importance Performance Analysis (IPA) Methods

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Submitted: Mar 22, 2024 | **Accepted**: May 15, 2024 | **Published**: June 13, 2024

Abstract: Promotion is one of the rights and obligations of lecturers for the performance burden that has been carried out by lecturers in order to implement the basic values of the Tri Dharma of Higher Education. The lecturer ranking system is implemented based on the lecturer's performance in teaching, research, and service that has been carried out. The lecturer rank system is implemented through a fairly long process and verification, so that the creation of a good ranking system will provide good added value in higher education services to the performance of lecturers for promotion. In this study, optimization of the lecturer's functional position promotion system will be carried out. The result achieved is a lecturer rating system by calculating the weight of credit scores in order to obtain a recommendation for promotion of lecturers for functional positions in universities and based on the Customer Satisfaction Index from a survey conducted on 50 respondents showing a score of 76.12%. It states that the rating system is at the level of satisfaction.

Keywords: Customer Satisfaction Index, Importance Performance Analysis, Promotion, System, Lecturer

INTRODUCTION

The implementation of a system for the management of lecturers is a phenomenon that shows significant changes in academic governance and management in higher education institutions. Through this system, administrative processes related to promotion, promotion, and evaluation of lecturer performance are aligned with clear and transparent standards(Cunha, Cunha, and Morais 2021; Mukherjee, Burnham, and King 2021; Yi et al. 2021). This phenomenon covers a wide range of aspects, ranging from the use of information technology to support data management, to the application of objective criteria to assess the quality of scientific work, teaching, and contributions to institutional development. In addition, the faculty management system also reflects the efforts of educational institutions to increase accountability and professionalism in human resource management. With the adoption of this system, decisions related to academic careers can be made more fairly and based on measured performance, thereby boosting the motivation and achievement of lecturers in carrying out their duties. Nonetheless, the implementation of the system also poses some challenges, such as complex data management, expanding information technology infrastructure, as well as expanding administrative capacity to ensure its sustainability and effectiveness(Littlechild 2021). Overall, the phenomenon of applying systems to the management of lecturer concentration reflects the evolution in human resource management in higher education institutions, which focuses on improving quality, transparency, and accountability. Along with the rapid development of technology, humans are required to do work effectively and efficiently. To support these activities, adequate transportation facilities and infrastructure are needed. The increasing human population and increasing human activities cause the need for transportation facilities and infrastructure to be higher. Fulfilling the need for staffing in the USU FMIPA needs to be developed considering that until now it is still done manually. USU's

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FMIPA ranking database system needs to be changed with website-based filling in order to improve performance and collect data in an integrated manner. In determining the location of the facility there are several models that can be used. The University of North Sumatra (USU) has established a Research Master Plan (RIP) starting from 2016 to 2020 as a policy direction for research management for a period of five years. The preparation of USU's RIP was based on the policy of the Directorate of Research and Community Service of the Directorate General of Research and Development Strengthening of the Ministry of Research, Technology and Higher Education to decentralize research activities at universities which is a logical consequence of strategic policies to achieve the main goal, namely the establishment of a research system capable of carrying out its duties and functions effectively and efficiently. efficient. Based on USU's RIP 2016-2021, USU's superior fields are packaged in TALENTA, the development of engineering technology is one of the focuses. And this research is the basis for the development of engineering technology in the fields of energy, agriculture, natural disasters and so on. In this study, it will be explained the application of simple mathematics in calculating the credit score for lecturers' performance in promotions for functional positions considering that so far the promotion system has been carried out using a manual system where lecturers will always prepare the same file when they will do promotions so that it is considered less effective considering lecturers carry out the promotion process repeatedly and over a long period of time such as the process of promotion of young lecturers (teaching staff) to expert assistants takes 2 years of work this is the motivation of researchers to transform from manual to automation by building a database so that Lecturer's historical data is still stored under the name so that lecturers only need to update the data if there are changes in the future. After doing this research, it is hoped that an algorithm for building an online-database system based on a website can be obtained so that a simulation or demonstration of the system can be carried out by comparing the simulation values and real results to see the difference in numbers, this needs to be done to minimize calculation errors.

LITERATURE REVIEW

a. Service Quality

basically the quality of a service perceived by customers consists of two main dimensions. The first dimension, technical quality (outcome dimension) relates to the perceived quality of service outputs by customers, which can be further broken down into three types, namely search quality (can be evaluated before buying, for example price), experience quality (can only be evaluated after consumption, for example accuracy)(Islam et al. 2021). time, speed of service and neatness of results), and credence quality (difficult to evaluate customers even though they have consumed the service, for example the quality of heart surgery). The second dimension, functional quality (process-related dimension) relates to the quality of the service delivery method or involves the process of transferring technical quality, output or final results of data and service providers to customers (for example, accessibility of ATM machines, restaurants or business consultants, appearance and behavior of waiters, bank teller, bus driver, or flight attendant)(Denantes and Donoso 2021). In addition, functional quality is also influenced by the presence of other customers who simultaneously consume the same service. They can cause long queues or annoy certain customers. However, on the other hand they can also influence the creation of a pleasant buyer-seller interaction.

concludes that there are five dimensions of ServQual (Service Quality) as follows(Li et al. 2021):

1. Tangibles, or physical evidence, namely the ability of a company to show its existence to external parties. The appearance and capabilities of the company's physical facilities and infrastructure and the state of the surrounding environment are tangible evidence of the services provided by the service provider.
2. Reliability, or reliability, namely the company's ability to provide services as promised accurately and reliably. Performance must be in accordance with customer expectations which means timeliness, the same service for all customers without errors, a sympathetic attitude, and with high accuracy.
3. Responsiveness, or responsiveness, namely a willingness to help and provide fast (responsive) and appropriate service to customers, with clear information delivery. Letting customers wait for no apparent reason causes negative perceptions of service quality.
4. Assurance, or assurance and certainty, namely the knowledge, courtesy, and ability of company employees to foster customer trust in the company. Consists of several components, including communication, credibility, security, competence, and courtesy.
5. Empathy, namely giving sincere and individual or personal attention given to customers by trying to understand consumer desires. Where a company is expected to have understanding and knowledge of customers, understand specific customer needs, and have comfortable operating times for customers.

b. Service Quality Improvement

developing effective service quality there are at least five instructions that need to be carried out through information systems, namely(Zihayat et al. 2021):

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1. Measuring the amount of customer expectations for services, companies must be able to measure the amount of expectations that arise for the services provided to customers.
2. Determine where the emphasis is on the quality of information, the company must be able to determine the location of the emphasis on the quality of information to be achieved.
3. Knowing customer suggestions, companies are required to listen and understand customer suggestions regarding services.
4. Connecting service performance and output produced by the company, the company is expected to be able to link service performance with company goals.
5. Reaching all employees, the establishment of information systems in service quality must be able to cover all related individuals in the organizational hierarchy.

c. Service Improvement Strategy

Many factors need to be considered in an effort to improve service quality. These efforts have an impact on the overall organizational culture. These factors include(Piechota, Glas, and Essig 2021):

1. Identifying the Main Determinants of Service Quality, The first step that needs to be done in identifying the main determinants of service quality is conducting research, the next is estimating the assessment given by the target market to the company and competitors based on these determinants. With this, it can be seen the relative position of the company in the eyes of customers compared to competitors, so that the company can focus its quality improvement efforts on these determinants.
2. Managing Customer Expectations, One thing that can be used as a guide in this case is "don't promise what you can't deliver, but give more than what is promised".
3. Managing Evidence of Service Quality, Management of evidence of service quality aims to strengthen customer perceptions during and after services are provided. Service is a performance that cannot be felt as well as goods, so customers tend to pay attention to tangible facts related to services as evidence of quality. Evidence of quality in service companies includes everything that is seen by consumers as indicators of "what kind of service is provided" (pre-service expectation) and "what kind of service has been received" (post-service evaluation). Evidence of service quality can be in the form of physical facilities, appearance of service providers, equipment and equipment to provide services and so on.
4. Educate Consumers About Services, in order to convey service quality, helping customers understand a service is a very positive endeavor. Educated customers will be able to make better decisions, so that their satisfaction is created higher.
5. Develop a Quality Culture, Efforts to establish a quality culture can be carried out through the development of a coordinated program that begins with employee selection and development. There are eight main interrelated programs to form a quality culture, namely individual development, management training, human resource planning, performance standards, career development, opinion surveys, fair treatment and profit sharing.
6. Creating Automated Quality, Automation can overcome the variability of service quality caused by the lack of human resources. But before deciding to do automation, companies need to do careful research to determine the parts that require automation. It is necessary to avoid automation that covers the entire service.
7. Follow up Services, Following up on services can help identify those aspects of the service that need improvement.
8. Develop Service Quality Information System, Service quality information system is a system that uses various research approaches systematically to collect and disseminate service quality information to support decision making.

d. Customer satisfaction

The word "satisfaction" comes from the Latin "satis" which means good enough, adequate and "facio" which means to do make. In simple terms, satisfaction is defined as "efforts to fulfill something" or "make something adequate". According to Drosos satisfaction is a person's feelings of pleasure or disappointment arising from comparing the perceived performance of the product (or outcome) against their expectations(Drosos et al. 2021). If performance fails to meet expectations, customers will be dissatisfied. If performance matches expectations, customers will be satisfied. If performance exceeds expectations, the customer will be very satisfied or happy(Rafique et al. 2023; Sulaiman et al. 2022). From the definition above, it can be concluded that customer satisfaction from the customer's point of view is about what customers feel about the services that have been provided compared to what they want. Customers will feel satisfied if the customer's wishes have been fulfilled by the company as expected. Customer satisfaction is influenced by several factors, namely(Balinado et al. 2021; Thanh and Anh 2023; Tuan et al. 2022):

1. The quality of the product or service. Regarding the quality of a product or service that is more qualified, it can be seen from its physical appearance. For example, Room Facilities are quite spacious and

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comfortable

2. Quality of Service. Various types of services will always be criticized by customers, but if the service meets customer expectations then indirectly the service is said to be of high quality. For example, the service of customer complaints is immediately addressed or responses to customer complaints.
3. Price, Price is the most sensitive thing to meet customer needs. Customers will tend to choose products or services that offer lower prices than others.
4. Time of delivery, meaning that both the distribution and delivery of products or services from the company can be on time and in accordance with the agreed agreement.
5. Security, Customers will be satisfied if the product or service used has a security guarantee that does not endanger the customer.
6. Measuring Customer Satisfaction
   There are four methods to measure customer satisfaction, namely(Jin and Ruan 2023):
   1. Complaints and Suggestion System, A customer-oriented industry will provide a form for customers to report their likes and complaints. In addition, it can be in the form of suggestion boxes and telephone complaints for customers. This flow of information provides many good ideas and the industry can move more quickly to solving problems (knowing the rate of customer loss).
   2. Customer Satisfaction Survey, the industry cannot use the level of complaints as a measure of customer satisfaction. Responsive industries measure customer satisfaction by conducting periodic surveys, namely by sending a list of questions or making random calls from customers to find out how they feel about various industry performances. In addition, they were asked about the performance of their rival industries.
   3. Ghost Shopping (Shadow Customers), Shadow customer is getting people to pretend to be customers and report the strong points as well as the weak points experienced when buying products from one's own industry or a competing industry. Also, the shadow customer reports whether the salesperson handled it well or not.
   4. Analysis of Loss of Customers, the industry can contact customers who don't buy anymore or change suppliers to find out the reason (whether the price is high, the service is not good, the product is not reliable and so on, so that it can be controlled. Not only exit interviews are necessary, but monitoring the customer loss rate is also important, where the increase in the customer loss rate indicates the company's failure to satisfy its customers.

e. Customer Satisfication Index (CSI)

The customer satisfaction index is used to determine the level of satisfaction of service users as a whole by looking at the level of performance and the level of importance or expectations of service attributes(Hossain et al. 2021). To find out the magnitude of the CSI value, the following steps are:

1. Determine the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS)
   The Mean Importance Score (MIS) is the average of the importance scores of an attribute. While the Mean Satisfaction Score (MSS) is the average score for the level of satisfaction
   derived from the service performance perceived by the customer.

$$\text{MIS} = \frac{[\sum_{i=1}^{n} Y_i]}{n} \quad (1)$$

Where Y_i is the value of the importance of the i attribute and n is the number of respondents

$$\text{MSS} = \frac{[\sum_{i=1}^{n} Y_i]}{n} \quad (2)$$

Where Y_i is the value of the satisfaction of the i attribute and n is the number of respondent.

1. Next, the weight factor will be calculated which is the percentage weight of the MIS per indicator to the total MIS of all indicators

$$\text{WF} = \frac{\text{MIS}_i}{\sum_{i=1}^{n} \text{MIS}_i} \times 100\% \quad (3)$$

2. Where MIS_i is the satisfaction value of the ith attribute and $\sum_{i=1}^{n} MIS_i$ is the average total importance from i to n.Menghitung *weight score* which aims to see the score of each indicator with the following formula.

$$\text{WS}_\text{i} = \text{WF}_\text{i} \times \text{MSS} \quad (4)$$

3. Where WIF_i is the first weighted factor and MSS is the average score of the level of satisfaction. Determining the Customer Satisfaction Index (CSI), which is to assess customer satisfaction by looking at the percentage of satisfaction indicators to the maximum value of satisfaction

$$\text{WS}_\text{i} = \text{WF}_\text{i} \times \text{MSS} \quad (5)$$

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METHOD

Automation is the process of substituting monotonous manual operations with systems that have the ability to carry out those duties automatically. For instance, tasks such as updating lecturer information, computing qualification scores for promotion, and archiving documents. This can greatly decrease the amount of time needed to handle requests for advances and grades, so enabling administrative personnel to concentrate on other activities that necessitate human judgment. The automated system minimizes the probability of human error, such as inaccurate data input or miscalculations. By utilizing a centralized database that promptly updates information, the occurrence of input errors can be significantly reduced. Ensuring accuracy in lecturer data is crucial as any inaccuracies can impact their eligibility for promotion. The automation system allows linked lecturers to access all information pertaining to the upgrading process and class in a transparent manner. Users have the ability to view the current status of their applications, any outstanding requirements, and the projected time of completion. The transparency of the administrative process enhances the confidence and satisfaction of lecturers. A web-based or cloud-based system enables lecturers and administrative staff to conveniently access information and submit documents remotely, without any limitations on location or time. This is highly advantageous considering the demanding and diverse schedules of lecturers, both on campus and off campus. Automation ensures that every application is processed using standardized procedures, adhering to all norms and standards set by educational institutions. Ensuring justice and objectivity in the treatment of each case is crucial. The automated system efficiently gathers data and generates reports on rank and class management procedures. These reports can be utilized for in-depth examination of patterns, areas requiring enhancement, and the effectiveness of executed processes. University administrators can utilize this data to formulate strategic decisions. Utilizing AI and machine learning, advanced automation features can offer recommendations by analyzing previous data and predefined criteria. For instance, the system can suggest a promotion based on the output of lecturers in terms of their publications, teaching, and administrative duties. The path analyzes the relation of the satisfaction variable

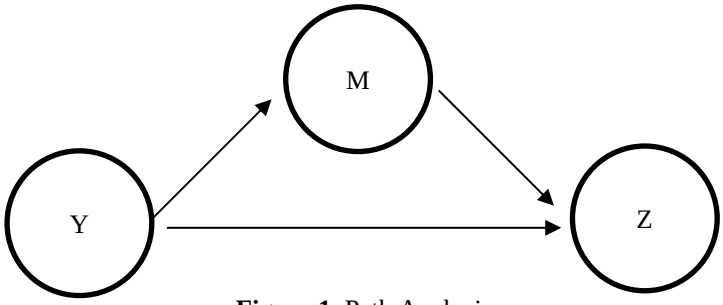

Figure 1. Path Analysis

Where Y is the independent variable of lecturer ranking, Z is the dependent variable of satisfaction of lecturer using and M is the mediation variable as a automation system in the propose of lecturer ranking. In this condition, a prototype of a ranking system will be formed by transforming it from manual into an automated system so that it is hoped that the creation of this system will improve services to lecturers in terms of rank management for lecturers' functional positions.

RESULT

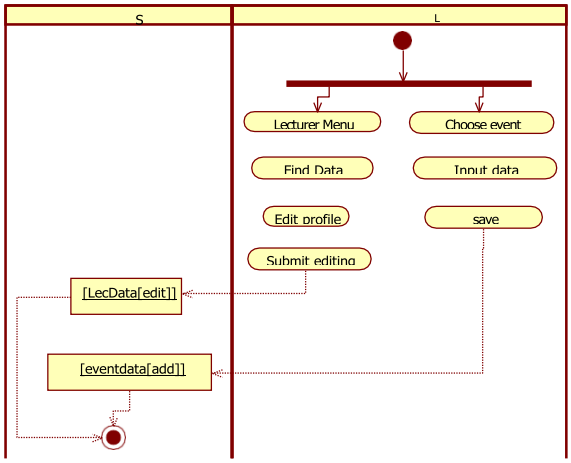

Figure 2. Illustration of the Ranking Process

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The formation of an algorithm or an illustration of rank management can be seen from Figure 1. In the management of rank, the system will manage the data that has been inputted by lecturers in accordance with regulations from the Government on credit score units for promotions so that the system will provide recommendations for promotion to lecturers according to the performance that has been done, this treatment also has a positive impact on lecturers for can monitor the development of credit scores that have been accumulated while serving as a lecturer so that if there is a shortage of lecturers, they can immediately know the activities that must be carried out, the activities that become the workload of lecturers in accordance with the Tridharma of higher education are Education, Research, and Service.

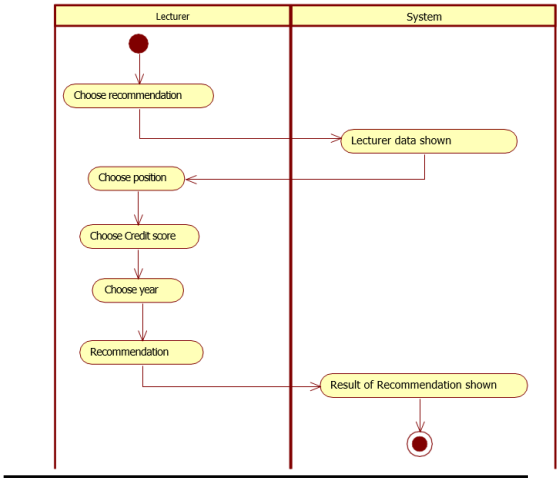

Figure 3. System Recommendation to Lecturers

To see the recommendations from the system, the lecturer must input several criteria requested by the system including the previous position, year, and the lecturer's credit score unit.

1. Database Design

In establishing a database-based online system, it is necessary to design a database by managing a SQL Server relational database so that the database design can later relate values.

2. Rank System Prototype Demonstration

Demonstration of Rank is carried out by comparing the final results of processing credit numbers generated via online-offline so that the level of accuracy and match value can be seen, if the error value is too large then the results of the system algorithm cannot be accepted and vice versa if the system output results show the error level results small then the algorithm on the prototype can be accepted.

Table 1 Comparison of Online-Offline Prototype Results Ranking

No	Position 1		Position 2		Manual Calculation				System Calculation				Result
	Pos	Max Cum	Pos	Min Cum	X1	X2	X3	X4	X1	X2	X3	X4	
1	EA	0	EA	150	150	10	1	0	150	10	1	0	Suitable
2	EA	0	L	200	200	10	1	0	200	10	1	0	Suitable
3	EA	150	L	200	22,7	15,7	7	7	22,5	17,7	7	7	Suitable
4	EA	150	L	300	65,7	52,7	17	17	65,7	52,7	15	15	Suitable
5	EA	150	HL	400	100	100	25	25	100	100	25	25	Suitable
6	EA	150	HL	550	160	160	40	40	160	160	40	40	Suitable
7	EA	150	HL	700	220	220	55	55	220	220	55	55	Suitable
8	L	200	L	300	45	35	10	10	45	35	10	10	Suitable
9	L	200	HL	400	80	80	20	20	80	80	20	20	Suitable
10	L	200	HL	550	140	140	35	35	140	140	35	35	Suitable
11	L	200	HL	700	200	200	50	50	200	200	50	50	Suitable
12	L	200	Prof	850	225,5	292,5	65	65	225,5	292,5	65	65	Suitable
13	L	200	Prof	1050	295,5	382,5	85	85	295,5	382,5	85	85	Suitable
14	L	300	HL	400	40	40	10	10	40	40	10	10	Suitable
15	L	300	HL	550	100	100	25	25	100	100	25	25	Suitable
16	L	300	HL	700	160	160	40	40	160	160	40	40	Suitable

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17	L	300	Prof	850	192,5	245,5	55	55	192,5	245,5	55	55	Suitable
18	L	300	Prof	1050	262,5	335,5	75	75	262,5	335,5	75	75	Suitable

From the simulation results of the system prototype, the results of the system data processing are suitable and acceptable to the rank manual.

DISCUSSIONS

The research describes the emerging phenomenon in an effort to improve the efficiency and effectiveness of administrative processes in colleges through the automation of the management of the functional posts of lecturers through a website. The phenomenon shows that the use of information and communications technology, in particular the creation of websites to automate administrative processes, is becoming increasingly important in improving the quality of service and user experience in the higher education environment. In this context, the creation of a website aimed at automating the functional post management process of lecturers is expected to provide ease, speed, and accuracy in the management of data and related documents, as well as provide better accessibility for lecturers to manage their post administration online. However, the success of implementing a website can be measured not only in terms of its technical functionality, but also by the user satisfaction with the experience of using the website. Therefore, the study uses the Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA) methods to analyze the level of user satisfaction with the features provided by the website. CSI is used to quantify customer satisfaction, while IPA is used for identifying levels of interest and performance of each website feature, so that areas that need to be improved can be found to improve user satisfactions. Through this analysis, it is expected to find valuable insights for the development and improvement of the website in order to better meet the expectations and needs of its users, as well as to make a positive contribution in improving the efficiency and quality of administrative services in the college.

CONCLUSION

In the research that has been done, algorithms and simple mathematical calculations have been formed in the formation of a power system. Based on the product transformation formed by establishing an online system for rank management, the same results are obtained in the rank output, the results obtained are acceptable and can be used as a reference in the website prototype. By distributing questionnaires to educators on the rank prototype, it is known that 72% of the results are satisfied with online-based rank services, 28% are dissatisfied because the system is still rigid and does not have a responsive User Interface.

ACKNOWLEDGMENT

This work is supported by Universitas Sumatera Utara scheme research program with grant No. 149/UN5.2.3.1/PPM/SPP-TALENTA USU/2021.

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