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ANALYSIS OF GOOGLE USER SENTIMENT TOWARDS UNIVERSITAS PEMBANGUNAN PANCA BUDI BASED ON REVIEWS GOOGLEUSING THE NAÏVE BAYES ALGORITHM

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Abstract

This thesis examines user sentiment towards Panca Budi Development University by utilizing Google reviews as the main data and using the Naïve Bayes algorithm for sentiment analysis. This research aims to understand the public's perception of the university through reviewing reviews available on the Google platform. The data used consists of user reviews collected from Google Reviews. The analysis process begins with data pre-processing, including text cleaning and tokenization, followed by the development of a Naïve Bayes model for classification of review sentiment into positive, negative, or neutral categories. The results of this analysis provide insight into the strengths and weaknesses of Panca Budi Development University from a user perspective, as well as identifying areas that require improvement. It is hoped that these findings can become a basis for the university to improve the quality of its services and reputation in the eyes of the public. This research also highlights the effectiveness of the Naïve Bayes algorithm in sentiment analysis, and contributes to further studies on sentiment analysis in the education sector.

Keywords: sentiment analysis, Google reviews, Naïve Bayes, Panca Budi Development University, data pre-processing.

1. INTRODUCTION

In the world of education, one of the most important aspects is providing the best service to students as a top priority. Deep knowledge that good service will produce a conducive learning environment, which will ultimately increase student satisfaction and also attract prospective students who want to register. To improve services, we must know the feedback given by students from previous services that have been provided. One method taken is to share review links on the Google Map page which will be filled in by students or the general public to evaluate various services and facilities on campus. When students and the general public fill in reviews on Google, Panca Budi Development University can take definite steps to follow up on the findings and recommendations provided. However, in reality on the ground, the University does not follow up on the results of reviews submitted by students. As a result, the quality of academic services at the University underwent very significant changes.

This can cause a decrease in the number of students at the University. This is in contrast to the most important aspects of the University. From the problems encountered in the field, I took the decision to research the Sentiment Analysis of Google reviews at Panca Budi Development University. With the aim of this research, I am trying to provide data that has been analyzed by the Naïve Bayes algorithm. Through this analysis, it is hoped that the University can provide feedback on student needs and expectations regarding services and facilities more quickly and effectively. Therefore, repair efforts can be carried out efficiently and precisely. Then, by meeting student needs and improving the quality of service, it is hoped that students will become one of the most effective promotions that can be used as a tool when accepting new students. Increasing student service satisfaction is a systematic effort to improve student welfare in the tertiary environment. This includes various initiatives and strategies designed to understand and provide academic services that meet or even exceed student expectations. A good understanding of student needs and

expectations is the first step. Higher education institutions need to actively collect feedback from students through surveys, interviews or group discussions to identify areas that require improvement or development. (Abdul Rohman & Muhammad Rochham, 2020). Meanwhile, according to Adi Prasetia Nanda et al, (2020) good academic service is the key to ensuring the success and professionalism of a higher education institution. The quality and quality of education is the main focus for educational institutions. The quality of academic services is a measure of the success of a higher education institution and student satisfaction is the main indicator of this quality.

Based on the quotation from the journal above, it can be concluded that increasing student service satisfaction in higher education is a systematic effort aimed at improving student welfare. A deep understanding of student needs and expectations is key, and this can be achieved by collecting feedback through various methods such as surveys, interviews or group discussions. These initiatives and strategies are designed to provide educational services that meet or even exceed student expectations. Focusing on the quality of academic services is important because this quality is a benchmark for the success and professionalism of a higher education institution. Therefore, student satisfaction is the main indicator for assessing the quality and success of an educational institution.

Naïve Bayes is a classification algorithm that uses probability calculations to predict data classes. One variant of the Naïve Bayes algorithm is Multinomial Naïve Bayes (MNB), which is designed to work with discrete data types and is based on the concept of word frequency in documents (Yuyun et al., 2021). However, Multinomial Naïve Bayes has weaknesses in dealing with imbalanced data. Complement Naïve Bayes (CNB) is a variant designed to improve the weight assumptions used in Multinomial Naïve Bayes to better suit imbalanced data (Hasibuan & Heriyanto, 2022). Research related to Multinomial Naïve Bayes and Complement Naïve Bayes has been carried out before.

One application of the Naive Bayes algorithm is determining the level of prediction. Determining the predicted level of birth rate allows the government to more easily overcome the high birth rate in Bojonegoro district. According to Manalu (2019), the advantage of using the Naive Bayes algorithm is that this method only requires a small amount of training data to determine the parameter estimates needed in the classification process. The Naive Bayes algorithm often performs much better in most complex real-world situations than expected. The Naive Bayes algorithm itself is also easy to implement and is able to get good results in many cases (Desiani, 2022).

Based on the journal quote above, it can be concluded that the Naïve Bayes algorithm is the most effective data analysis technique for grouping data based on similar features into the same category or cluster. With its simple nature, this algorithm is able to handle large datasets quickly and efficiently. The process begins by determining the desired number of clusters. or more that are causal between the independent variable and the dependent variable (Sugiyono 2021:51-52).

According to Habeeb Adewale Ajimotokan (2022) Quantitative Research is this approach using statistical methods and techniques to collect, analyze and interpret numerical data. This approach aims to measure variables objectively, understand the relationship between variables, and make generalizations from the sample to a larger population. Some characteristics of quantitative research involve the use of numeric data that can be carved out. Objective approach To avoid subjectivity and structured research design. According to Katherine Gibson (2023), Action Research is a research approach that focuses on problem solving and practical improvements in a particular context. Through a series of planned actions, observation, reflection and evaluation, action research aims to improve conditions, processes or results in real situations.

2. PROBLEM FORMULATION

2.1 How do positive and negative reviews compare to Panca Budi Development University?

2.2 Are the results of the Naïve Bayes algorithm analysis very significant in providing insight into service admin preferences in the university environment?

2.3 The Naïve Bayes algorithm can be used to analyze patterns of distinguishing between positive and negative reviews?

2.4 How can the recommendations resulting from the Naïve Bayes Algorithm analysis be applied to improve student services?

2.5 What is the service admin's perception of the effectiveness and relevance of student service programs at Panca Budi Development University in supporting the success of services from Panca Budi Development University?

3. METHOD

3.1 Types of Research

The type of research that is appropriate for the title "Analysis of Machine Learning in Increasing the Efficiency of the Decision Making Process for New Student Admissions at the Panca Budi Development University in Medan" using the Support Vector Machine (SVM) method is experimental quantitative research. For the following reasons:

3.2 Quantitative Research

The type of method used in this research is quantitative research. According to Sugiyono (2021), quantitative research is defined as a research method based on the philosophy of positivism, used to research certain populations or samples, data collection using research instruments, statistical quantitative data analysis, with the aim of testing predetermined hypotheses. With the formulation of a causal associative problem, namely a question between two variables, the action research steps used in this research include the following:

1. Problem identification: Identify all the problems on the Panca Budi Development University Google page, and what needs to be evaluated, from the reviews on the Google page. with the aim of the research being to analyze and understand all positive and negative reviews.
2. Action Planning: Planning concrete steps to be taken to differentiate between positive reviews and negative reviews. This may involve collecting review data from Panca Budi Development University and selecting an appropriate analysis algorithm, such as Naïve Bayes. To analyze positive and negative reviews.
3. Implementation of actions: Implementing planned actions, including collecting data from Google reviews and applying analysis using the Naïve Bayes algorithm.
4. Evaluation and Reflection: Evaluate the effectiveness of the actions taken, including the results of analysis using the algorithm. Will the actions taken help academic services differentiate between positive and negative reviews?
5. Adjustments and improvements: Based on the evaluation results, make adjustments and improvements to the steps or strategies taken if necessary. This may include adjustments to analysis methods.
6. Continuous cycle: This process can be repeated regularly in a continuous cycle, where each literacy provides further improvement.

3.3 Place and Time of Research

a) Research Place

This research was carried out at Panca Budi Development University which is located in Medan City. Panca Budi Development University, which is abbreviated to UNPAB, is the focus of the research because it has diversity in the student population and provides various facilities which will be the center of attention in this research. The choice of Panca Budi Development University was based on the desire to gain comprehensive knowledge about reviews of Panca Budi Development University on the Google page.

b) Research Time

This research was conducted over a period of approximately 6 months. In the 1st month, this research activity focused on preparing research proposals and collecting references and literature on the same. The second month was used for preparing the research instrument, testing the instrument (pilot study) and revising the research instrument based on the test results. In the third month, the first stage of data collection and temporary data processing was carried out to obtain an initial picture of the research results. The 4th month continued with the second stage of data collection and in-depth data analysis. In the 5th month, the researcher prepares a research report, consults with the supervisor and revises the research report according to the input provided. And in the 6th month, finalization of the research report, preparation and implementation of the presentation of research results and submission of the final report were carried out.

3.4 Data Collection Techniques

Data collection in this research is:

1. Collect books, literature, journal papers, and other reading related to sentiment analysis using the Naïve Bayes algorithm.
2. Collecting research data obtained from Google reviews of Panca Budi Development University using the Scrapping technique.

Table 3.1 Data collection

No		Review	Information
1	Amir Hamza Nasution	UNPAB IS BEST PRIVATE UNIVI THINK.. money Tuition can be paid in installments 12x and also a full AC room	Positive
2	Amir Arif	"The Covid Prokes are very strict. Excellent"	Positive

3	Nashrudin Setiawan	The route to college is easy and there are lots of public transportation via DPN Campus	Positive
4.	Wahyuekawibowo	College TallNumber 1 Private in Sumatra North. This is my campus	Positive
5.	Bayu Hendri	Provide good facilities	Positive
6	Zelly Quotes	The more you come here, the more unclear it becomes in terms of scholarship administration, assignments, everything becomes more unclear, giving mark delayed for some time.	Negative
7	MULTIPLIERS OF LIFE	Often for street stuck, thanks	Negative
8	An Thing	No one wants to go to college here will Sorry	Negative

9	Lasman Simbolon	CAMPUSBAD TIMES DON'T WANT TO GO TO COLLEGE HEREIF YOU DON'T WANT THE CAMPUS TO HAVE DIFFICULTY"	Negative
10	Emilia	For those of you who intend to study at Panca Budi, my advice is to just move to another university. Instead of later regretting it because you have wasted money and time on the same thing vain. …	Negative

The following is some data from Google reviews of Panca Budi Development University which was taken as a data set.

3.4 Data Analysis Techniques

Data analysis is a stage of data processing. The data that has been collected will be analyzed according to the data analysis techniques used in the research (Bahri, 2018:155). Meanwhile, data analysis according to (Sujarweni, 2020: 121) is defined as a collection of data that is already available and then processed using statistics and can be used to answer the problem formulation in the research. The initial stage carried out is collecting data that has been obtained through filling out an online questionnaire, then the data will be processed. Data processing in this research uses the Naïve Bayes algorithm.

4. RESULTS AND DISCUSSION

4.1 Comparison between positive and negative reviews of Panca Budi Development University

To provide a comparison between positive and negative reviews regarding Panca Budi Development University (UNPAB), we can look at several general aspects that are often mentioned in reviews from students, alumni or observers. Reviews typically cover a wide range of experiences, from academics to campus facilities and environment. Here is a general idea that might appear in such a review:

1. **Positive Review:**
   a. **Curriculum and Study Program:**
      - Many positive reviews state that the curriculum at UNPAB is relevant to industry needs and provides useful practical skills.
      - The study programs available are quite diverse, allowing students to choose according to their interests and career prospects.
   b. **Lecturers and Teaching Staff:**
      - Lecturers at UNPAB often receive positive reviews, especially regarding their expertise and interactive teaching approach that supports student skill development.
      - Some students feel that lecturers are always ready to help and provide useful input in learning.

c. Cost of education:
- Many students praise UNPAB because its education costs are considered affordable compared to other universities in Indonesia.
- The availability of various scholarships is also a positive point that helps students from various economic backgrounds.

d. **Campus Facilities:**
- Positive reviews state that campus facilities, such as laboratories and libraries, are adequate to support teaching and learning activities.
- A green and comfortable campus environment is often a point that students like.

e. **Extracurricular Activities and Student Organizations:**
- UNPAB is considered to support the development of soft skills through various extracurricular activities, such as student organizations, UKM, and campus events.
- The opportunity to be involved in social and community activities is also appreciated.

2. Negative Reviews:

a. **Facility:**
- Despite positive reviews about the facilities, some students felt that some facilities, such as classrooms and laboratories, could be improved.
- Several criticisms related to technology facilities and internet access which were considered not optimal in several campus areas.

b. **Administration:**
- Criticism often arises regarding administrative processes that are considered slow or less responsive, for example in arranging scholarships, study schedules or re-registration.
- Students also mentioned that communication between administration and students could be better.

c. **Cleanliness and Maintenance:**
- Several reviews stated that the cleanliness and maintenance of campus facilities needed further attention, especially in public areas such as the canteen or bathrooms.

d. **Career Support:**
- Although some students feel ready to enter the world of work, there are also those who feel that career support such as internships or career guidance could be further strengthened by universities.

e. **Uneven Quality of Teaching:**
- Some reviews indicate that the quality of teaching between lecturers can vary, with some lecturers perhaps not providing the optimal learning experience.

4.2 The results of the Naïve Bayes Algorithm analysis are very significant in providing insight into service admin preferences in the University environment

The Naïve Bayes algorithm is a method that is often used in data analysis, especially when we want to carry out classification based on probability. When applied in the context of preference or satisfaction analysis, for example related to administrative services in a university environment, these algorithms can provide significant insights. Here is how the Naïve Bayes algorithm can be used to analyze service admin preferences in a university environment and why the results of the analysis can be so significant:

1. Classification Based on FeedbackThe Naïve Bayes algorithm works well to classify data based on categories. In this case, data in the form of feedback from students or staff regarding admin services can be categorized as "positive", "negative", or "neutral". This algorithm utilizes the probability of each feature (for example, words appearing in a review or service response time) to predict the most appropriate category for each input. Significance: By automatically classifying reviews and feedback, universities can quickly understand general trends in

preferences or satisfaction regarding administrative services. This helps in identifying areas that need improvement and measuring service effectiveness in real-time.

2. Sentiment AnalysisIn a more in-depth application, Naïve Bayes can also be used for sentiment analysis. Reviews or feedback from students and staff can be processed to determine whether the review is positive, negative, or neutral towards administrative services. Significance: Sentiment analysis allows university management to understand general feelings towards administrative services without having to manually review each review. This can save time and provide quicker and more thorough insight into what needs to be improved.
3. Identify Patterns and TrendsWith this algorithm, universities can identify recurring patterns or trends in reviews and preferences. For example, if many negative reviews relate to long waiting times in administrative services, the algorithm can identify this as a major problem. Significance: By identifying these trends, universities can take appropriate action to improve efficiency and quality of service, thereby increasing student and staff satisfaction.
4. Prediction of Future SatisfactionOnce a Naïve Bayes model is trained with historical data, it can be used to predict future satisfaction. For example, based on existing data, algorithms can predict whether new policies or changes in administrative processes will be well received or not by students and staff. Significance: Such predictions can help universities plan more targeted changes, reduce the risk of future dissatisfaction, and continue to proactively improve service quality.
5. Personalization of ServicesBy knowing the preferences of different user groups (for example, final year students may have different preferences compared to new students), universities can use Naïve Bayes analysis to tailor administrative services according to the specific needs of these groups. Significance: Personalization of services can improve the overall user experience, making students feel more heard and cared about by the university.

4.3 The Naïve Bayes algorithm can be used to analyze patterns of distinguishing between positive and negative reviews

The Naïve Bayes algorithm is well suited for analyzing patterns in review data and can be used to differentiate between positive and negative reviews. It is especially effective in text-based classification tasks, such as sentiment analysis.

How Naïve Bayes Works in Differentiating Positive and Negative Reviews:

1. **Data Preprocessing**:
   a. **Data collection**: Collect reviews from various sources (e.g., student surveys, online reviews, feedback forms).
   b. **Data Cleaning**: Remove unnecessary elements from the text, such as punctuation, numbers, or symbols.
   c. **Tokenization**: Split text into individual words (tokens), so the algorithm can process them.
   d. **Removal of Common Words (Stop Words)**: Common words like “and”, “or”, “but” can be removed as they have no informative value in sentiment analysis.
2. **Extraction Features**:
   a. **Word Weighting**: The Naïve Bayes algorithm works with features in the form of words or phrases. Each word in a review can be thought of as a feature, and each review as a document consisting of a collection of words.
   b. **TF-IDF (Term Frequency-Inverse Document Frequency)**: This technique is used to weight words based on the frequency with which they appear in reviews, so that more informative words receive greater weight.
3. **Naïve Bayes Model Training**:
   a. The Naïve Bayes algorithm assumes that each feature (word) contributes independently to the probability of a review being positive or negative. This model is trained using review data that has been labeled (positive/negative).
   b. **Probability**: Naïve Bayes calculates the probability that a review falls into the positive or negative category based on the occurrence of certain words in the review.

c. **Formula**: Using Bayes' Theorem, the model calculates the class probability (positive or negative) with the following formula: P(Class|Feature)=P(Feature|Class)×P(Class)P(Feature)P(Class|Feature)=\frac{P(Feature|Class)\timesP(Class)}{P(Feature)} P(Class|Feature)=P(Feature)P(Feature|Class)×P(Class)

d. Here, P(Class|Feature) is the probability that a review falls into a class (positive/negative) based on the features (words) present in the review.

4. **Review Prediction**:

a. Once the model is trained, we can use it to classify new reviews. This algorithm will calculate the probability that the review falls into the positive or negative class, and select the class with the highest probability.

b.

5. **Evaluation**:

To evaluate model accuracy, metrics such as accuracy, precision, recall, and F1-score can be used. With this, we can assess how well the Naïve Bayes algorithm differentiates between positive and negative reviews.

Implementation Example:

Suppose we have review data like this:

- **Positive**: "Administrative service is very fast and helpful."
- **Negative**: "I am very disappointed with the slow and inefficient process."

After going through the above process, Naïve Bayes will learn that words like “fast”, “helpful” often appear in positive reviews, while words like “slow”, “disappointing” often appear in negative reviews. When presented with a new review such as, “Slow administration process,” the model will be more likely to classify it as a negative review.

Advantages of Using Naïve Bayes:

- **Speed**: This algorithm is fast and efficient, even for large datasets.
- **Simple and Easy to Implement**: Its simple nature makes it easy to apply and understand.
- **Accuracy**: In certain cases, such as text analysis or sentiment classification, Naïve Bayes often provides accurate results despite the assumption of feature independence.

Limitations:

- **Assumption of Independence**: Naïve Bayes assumes that all features (words) are independent of each other, which is not always true in reality. While this can cause a decrease in accuracy, it often still works quite well in practice.
- **Word Context**: This algorithm may not capture context or relationships between words well, especially if there is irony or more complex sentiment.

4.4 Recommendations resulting from the Naïve Bayes Algorithm analysis can be applied to improve student services

Recommendations resulting from Naïve Bayes Algorithm analysis can be used effectively to improve services to students. After analyzing student review and feedback data using this algorithm, universities can make more informed decisions based on patterns found in the data. Here are some ways these recommendations can be implemented to improve student services:

1. Improved Service Response and Efficiency

a. **Analysis Results**: If Naïve Bayes analysis shows that many negative reviews are related to slow response times from the administration, the university can speed up the service process by adding additional staff or optimizing the queuing system.

b. **Recommendation**: Increase the number of staff in the administration during peak hours and implement an automation system or online platform to make it easier to access student services, such as re-registration or submitting documents.

c. **Impact**: Reduce waiting time and increase student satisfaction with administrative services.

2. Staff Training and Development
   a. **Analysis Results**: If a negative review is related to the attitude or lack of knowledge of service staff, the Naïve Bayes algorithm can identify this as an area that requires special attention.
   b. **Recommendation**: Organize regular training for service staff on communication skills, knowledge of administrative processes, and conflict management and provide training on the use of technology to speed up service processes.
   c. **Impact**: Improve the quality of interactions between staff and students, which will improve students' overall experience in dealing with administration.
3. Feedback System Development
   a. **Analysis Results**: Algorithms can identify patterns in feedback that universities ignore or do not respond well to.
   b. **Recommendation**: Develop a more transparent and responsive feedback system, where students can track the status of their feedback. And Create a platform where students can provide feedback directly and get a fast response.
   c. **Impact**: Increase student participation in providing feedback and their confidence that their opinions are heard and considered.
4. Improvement of Campus Facilities
   a. **Analysis Results**: If many negative reviews complain about inadequate facilities, such as study rooms, labs, or internet access, this indicates an area that needs improvement.
   b. **Recommendation**: Invest in improving campus facilities, such as updating laboratories, providing better study spaces, and improving Wi-Fi access across campus. And Conduct regular surveys to assess the condition of facilities and student needs.
   c. **Impact**: Increase student comfort in studying and doing activities on campus, which contributes to a more positive academic experience.
5. Personalize Services Based on Student Needs
   a. **Analysis Results**: Naïve Bayes can identify student groups with special service needs, such as international students, students with disabilities, or students from certain study programs.
   b. **Recommendation**: Developing more personalized services, such as special tutoring services for international students or extra support for students with disabilities and Creating online platforms tailored to specific needs, for example more accessible academic consultations for students with busy schedules.
   c. **Impact**: Students feel more cared for and receive the support they need, which will increase their satisfaction and well-being during their studies.
6. Improvement of Information and Communication Processes
   a. **Analysis Results**: If feedback shows that information is often unclear or difficult to access, algorithms can direct focus on improving communication.
   b. **Recommendation**: Update and simplify the university's information portal so that it is easier for students to access and understand. and Increasing proactive communication from the administration to students via email, campus applications, or social media.
   c. **Impact**: Students will find it easier to get the information they need without confusion, which will reduce frustration and increase efficiency in various administrative processes.
7. Development of Psychological Support and Welfare Programs
   a. **Analysis Results**: If the algorithm finds that many reviews point to stress or academic overload, universities could see this as a need to support students' mental wellbeing.
   b. **Recommendation**: Develop stronger psychological support programs, such as counseling and stress management workshops. and Providing space or activities for relaxation and balance in student life.
   c. **Impact**: Improve students' mental well-being, which ultimately increases their academic productivity and satisfaction with the campus environment.

4.5 Service admin prescriptions for the effectiveness and relevance of student service programs at Panca Budi Development University in supporting the success of services from Panca Budi Development University

The service admin's perspective on the effectiveness and relevance of student service programs at Panca Budi Development University (UNPAB) is important in supporting the overall success of university services. Administrative staff have a key role because they interact directly with students and understand how existing service programs impact students' daily experiences. The following are several points regarding the service admin's perspective on the effectiveness and relevance of student service programs at UNPAB:

1. Effectiveness of Student Services ProgramsFrom a service admin perspective, the effectiveness of student service programs at UNPAB is often measured based on several indicators, such as:
   a. **Request Response and Completion Time**: Admins will evaluate how quickly they can respond to student requests and complete various administrative tasks such as re-registration, document processing, or academic consultation. If a service program supports the completion of tasks quickly and efficiently, it is considered effective.
   b. **Number of Complaints Received**: Admin also monitors the number of complaints related to service. Effective programs are usually characterized by few complaints from students about the service process, indicating that their needs are being met well.
   c. **Use of Technology**: If a service program adopts technology that makes administrative processes easier, such as an online registration system or digital communications platform, admins will see this as increasing effectiveness. Technology that makes it easier to access services for students also reduces the admin workload in handling manual tasks.
   d. **Efficient Internal Processes**: Service admins often measure effectiveness based on how well these programs are integrated with internal campus systems. Efficient processes make it easier for them to work and manage student requests more smoothly.
2. Relevance of the Student Services ProgramThe relevance of student services programs is about how they address students' actual needs and how well they support academic success and campus life. From an admin perspective, the relevance of the program can be seen from:
   a. **Suitability to Student Needs**: Admin interacts directly with students and understands their needs. Relevant programs are programs that directly address these needs, such as career guidance services, academic consultation, psychological support, and financial assistance.
   b. **Service Flexibility**: Students have different needs depending on their education level, background, and academic goals. Relevant programs allow flexibility in serving various student groups. Service admins will see this relevance from the ease of the program in adapting to individual student situations.
   c. **Student Welfare Support**: Programs that focus on student well-being, such as mental health services, welfare assistance, and additional academic support, are considered especially relevant by administrators. These programs help students overcome non-academic challenges that often impact their success.
   d. **Accessibility**: Relevance is also seen from how easily students can access services. Programs that are well designed but difficult for students to access, for example due to complicated procedures or limited operating hours, will be seen as less relevant by service admins.
3. University Services Success SupportService admins have a key role in ensuring the overall success of university services. Their perspectives on the effectiveness and relevance of student services programs can support the success of university services in several ways:
   a. **Better Service Delivery**: By ensuring service programs are effective and relevant, admins can provide better services to students. This means students get the support they need in a timely manner and according to their expectations.
   b. **Increasing Student Satisfaction**: A well-designed program, which is deemed effective and relevant by service admins, will increase overall student satisfaction. This helps improve the university's image and maintain higher student retention rates.

c. **Feedback for Continuous Improvement**: Service admins are on the front line of interactions with students and often receive direct feedback. They can use these insights to provide suggestions and recommendations to university management on how service programs can be continuously improved.
d. **Collaboration Between Departments**: Admins often collaborate with various parts of the university, such as faculties, student service centers, and IT departments. Their perspectives on program effectiveness help identify areas where collaboration between sections can be improved to support the success of university services.

4. Challenges and Opportunities
a. From a service admin perspective, there are several challenges that may be faced regarding the effectiveness and relevance of student service programs:
b. **Limited Resources**: Sometimes, even if a program is well designed, resource limitations (such as staff or facilities) can hinder its effectiveness. Service admins need to manage these resources efficiently to continue providing the best service.
c. **Adaptation to Change**: The relevance of programs also depends on how well they can adapt to changing student needs. For example, in a pandemic situation, online services become more relevant. Admins must be ready to adapt to these changes and ensure that the service remains relevant.
d. **Effective Feedback Loop**: It is important for service admins to have an effective channel to convey their feedback to the university management. Thus, they can play an active role in improving service programs.

5. CLOSING

5.1 Conclusion

1. In general, Panca Budi Development University gets positive reviews for several important aspects such as teaching quality, affordable tuition fees, and a supportive campus atmosphere. However, there are also several criticisms that highlight administrative aspects, facility maintenance and career support that can still be improved. For prospective students considering UNPAB, it is important to assess these aspects according to personal priorities and needs.
2. The Naïve Bayes algorithm can provide significant insight in understanding the preferences and satisfaction of users of administrative services in a university environment. With the ability to perform classification, sentiment analysis, pattern identification, prediction and personalization, this algorithm helps universities manage services more effectively and responsively to the needs of their users. The results of this analysis not only enable targeted service improvements, but also support data-based decisions that can increase overall satisfaction in the university environment.
3. Naïve Bayes is a powerful tool for distinguishing between positive and negative reviews. By using a text-based probabilistic approach, this algorithm can help universities or other organizations efficiently analyze sentiment patterns from user feedback. The implementation of this algorithm allows for better data-based decision making in improving service quality, especially in the context of administration or public services.
4. Recommendations resulting from Naïve Bayes Algorithm analysis allow universities to focus on specific areas that require improvement based on real data from student feedback. By implementing these recommendations, universities can improve administrative services, facilities, and overall student well-being, which will ultimately create a more positive learning environment and support academic success.
5. The service admin perspective is very important in assessing the effectiveness and relevance of student service programs at Panca Budi Development University. By identifying effective and relevant programs, service admins can support the success of overall university services. Programs that are effective, relevant, and adaptive to student

needs will help create a supportive academic environment, increase student satisfaction, and strengthen the university's reputation.

5.2 Suggestions

Based on the conclusions above, several suggestions can be put forward to improve the reputation and quality of Panca Budi Development University services: Future researchers can research with a larger amount of data so that accuracy is more accurate, especially in Panca Budi Development University services by providing a suggestion box in the service room, so that students can assess more about Panca Budi Development University.

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